

SECTION 4: AIRCRAFT OPERATING COSTS

4.1 INTRODUCTION

This section provides estimates of variable and fixed aircraft operating costs. Aircraft variable operating costs are important factors in the evaluation of FAA investment and regulatory programs that bear on the time spent in air transportation. The variable operating costs of aircraft affect aircraft operators directly and users of air service indirectly in the form of higher fares or taxes. Fixed aircraft costs may also be important in evaluating the effects of FAA investment and regulatory programs that affect fleet size or cause aircraft to be out of service for extended periods of time.

Costs in this section are shown for 1996 data for air carrier, general aviation and military equipment types. Data are presented for various aircraft categories and more aggregate user profiles. Detailed aircraft specific data are provided in supporting tables. Summary data are weighted by hours, except for military data, which are weighted by fleet.

Cost data are defined for air carrier and general aviation aircraft as variable or fixed. Variable costs change in proportion to aircraft usage, and include fuel and oil, maintenance and crew costs. Fixed costs show little or no change in proportion to changes in activity. There are two estimates of fixed costs provided. The first is fixed accounting charges including depreciation, insurance, and rental charges reported by carriers in Forms 41 and 298-C, or estimated for GA operators by independent services.

A second estimate of fixed costs is provided for commercial aircraft only. If an FAA initiative improves system efficiency, an operator may be able to provide the same service with fewer aircraft; alternatively, an FAA initiative may cause aircraft to be out of service or to be deleted from the fleet entirely. In either case, an estimate of the benefit or cost to the carrier of an FAA initiative would include the carrier's opportunity costs—the value of the aircraft in its next best use. One immediate alternative use of an aircraft might be to lease it out to another operator. Since there is a well-defined market for operating (short-term) leases for most aircraft types, one can use the average monthly lease rate as a good proxy for the benefit or cost over a defined period of time.

4.2 AIR CARRIER AIRCRAFT

Cost data for air carriers were derived from Bureau of Transportation Statistics (BTS) Form 41 and Form 298-C data. Form 41 data cover large air carriers (generally those with annual revenues of at least \$100 million¹). Form 298-C data cover smaller air carriers (generally commuters). Data are shown for the following categories of cost for each equipment type:

¹ Some carriers have exemptions from reporting Form 41 data.

- Fuel and Oil: Aircraft fuel and oil costs are the dollar value of stocks issued for flight operations.
- Maintenance: Maintenance costs include labor, parts, materials, and burden for aircraft and engine maintenance.
- Crew: Includes flight deck crew and flight attendants. Flight attendant costs are not available by equipment type, and are here allocated to equipment types by available seat miles.
- Depreciation: Depreciation measures the consumption of a fixed asset over its life, due to use and time. Depreciation charges recorded by air carrier flight equipment, engines and related equipment are included in this category. It is based on historical cost.
- Rentals: The amortization (for capital leases) and rental charges (for operating leases) for fixed assets are recorded in this category. Air carriers that file on Form 298-C do not report separate amounts for rentals and amortization.
- Insurance: These are charges typically paid to indemnify operators for accidents.
- Other: Insurance costs are reported as “other” costs in Form 298-C.^{2,3}

For air carriers, costs are reported on both a per block hour and per airborne hour basis. Tables 4-1A and B summarize variable and fixed costs per block hour and per airborne hour for large passenger (Form 41) air carriers. Tables 4-2A and B report the same information for Form 41 all freight airlines.

The variable operating costs in each table are comprised of Fuel and Oil, Total Maintenance, and Crew. Selected ownership costs are those most closely related to the carrier’s cost of ownership of the aircraft, namely depreciation, amortization, rentals, and insurance.

Tables 4-3A and B and 4-4A and B summarize per hour variable and fixed costs per block hour and per airborne hour by Part 298-C commuter operations. Tables 4-3A and B provide data on the unique operating environment of Part 298-C carriers in Alaska, while Tables 4-4A and B report on all other Part 298-C carriers.

² See FAR 298.63 reporting requirements for complete definitions.

³ “Other” is defined as including “general (hull) insurance and all other expenses incurred in the inflight operation of aircraft and holding of aircraft and aircraft operational personnel in readiness for assignment to inflight status, which are not provided for otherwise in this schedule.” See FAR 298.63(d)(1)(iii).

Table 4-1A
Large (Form 41) Carrier Operating and Fixed Costs Per Block Hour

Economic Values Class	Per Block Hour									
	(Column 1)	(Column 2)	(Column 3)	(Column 4)	(Column 5)	(Column 6)	(Column 7)	(Column 8)	(Column 9)	(Column 10)
Crew	Fuel & Oil	Maintenance	Total Variable Costs	Rentals	Depreciation	Insurance	Total Fixed Costs	Total Costs	Block Hours	
Two-engine narrow body jet	777	554	429	1,760	320	133	11	464	2,665	9,622,195
Two-engine wide body jet	1,348	1,041	705	3,094	548	302	13	863	4,374	1,080,550
Three-engine narrow body jet	982	842	585	2,410	92	85	7	184	3,149	1,478,241
Three-engine wide body jet	1,778	1,639	1,310	4,727	337	821	15	1,173	6,575	879,513
Four-engine narrow body jet	473	673	803	1,949	659	48	52	759	3,336	68,930
Four-engine wide body jet	2,349	2,551	1,604	6,504	971	453	26	1,450	8,426	448,155
Regional jet under 40 seats	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Regional jet with 40-59 seats	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Regional jet over 59 seats	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Turboprops under 20 seats	114	89	110	314	75	43	7	124	570	491,669
Turboprops with 20 or more seats	181	114	250	545	215	46	8	268	1,033	1,081,703
Piston	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
All Aircraft	879	695	530	2,104	321	181	11	513	3,118	15,150,956

Source: BTS Form 41 for year-end 1996.

NR = No data reported.

Col 1: Total flight deck and flight attendant costs divided by total block hours.

Col 2: Cost of total fuel and oil consumed divided by total block hours.

Col 3: Maintenance and maintenance overhead (burden) costs divided by total block hours.

Col 4: Columns 1+2+3.

Col 5: Total amortization (for capital leases) and rental charges (for operating leases) divided by total block hours.

Col 6: Total depreciation charges divided by block hours.

Col 7: Total insurance costs divided by total block hours.

Col 8: Columns 5+6+7.

Col 9: Columns 4+8.

Col 10: Block hours reported in Form 41.

Table 4-1B
Large (Form 41) Carriers Operating and Fixed Costs Per Airborne Hour

Economic Values Class	Per Airborne Hour									
	(Column 1)	(Column 2)	(Column 3)	(Column 4)	(Column 5)	(Column 6)	(Column 7)	(Column 8)	(Column 9)	(Column 10)
Crew	Fuel & Oil	Maintenance	Total Variable Costs	Rentals	Depreciation	Insurance	Total Fixed Costs	Total Costs	Airborne Hours	
Two-engine narrow body jet	928	665	515	2,108	384	159	13	557	2,665	8,015,424
Two-engine wide body jet	1,489	1,152	780	3,420	606	334	14	954	4,374	977,047
Three-engine narrow body jet	1,188	1,025	712	2,925	112	104	9	224	3,149	1,216,170
Three-engine wide body jet	1,981	1,827	1,459	5,268	375	915	17	1,307	6,575	789,247
Four-engine narrow body jet	582	829	990	2,401	813	59	64	935	3,336	55,950
Four-engine wide body jet	2,488	2,703	1,699	6,890	1,029	479	28	1,536	8,426	423,086
Regional jet under 40 seats	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Regional jet with 40-59 seats	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Regional jet over 59 seats	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Turboprops under 20 seats	149	116	143	408	97	55	9	162	570	378,221
Turboprops with 20 or more seats	228	145	318	692	273	58	10	341	1,033	850,086
Piston	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
All Aircraft	1,044	829	632	2,506	383	216	14	612	3,118	12,705,231

Source: BTS Form 41 for year-end 1996.

NR = No data reported.

Col 1: Total flight deck and flight attendant costs divided by total airborne hours.

Col 2: Cost of total fuel and oil consumed divided by total airborne hours.

Col 3: Maintenance and maintenance overhead (burden) costs divided by total airborne hours.

Col 4: Columns 1+2+3.

Col 5: Total amortization (for capital leases) and rental charges (for operating leases) divided by total airborne hours.

Col 6: Total depreciation charges divided by airborne hours.

Col 7: Total insurance costs divided by total airborne hours.

Col 8: Columns 5+6+7.

Col 9: Columns 4+8.

Col 10: Airborne hours reported in Form 41.

Table 4-2A
Large (Form 41) Air Freight Carrier Operating and Fixed Costs Per Block Hour

Economic Values Class	Per Block Hour									
	(Column 1)	(Column 2)	(Column 3)	(Column 4)	(Column 5)	(Column 6)	(Column 7)	(Column 8)	(Column 9)	(Column 10)
Crew	Fuel & Oil	Maintenance	Total Variable Costs	Rentals	Depreciation	Insurance	Total Fixed Costs	Total Costs	Block Hours	
Two-engine narrow body jet	1,012	829	799	2,640	647	602	45	1,294	3,934	117,509
Two-engine wide body jet	926	991	1,505	3,422	1,953	392	53	2,398	5,820	84,089
Three-engine narrow body jet	1,229	789	1,535	3,553	232	870	28	1,129	4,683	298,091
Three-engine wide body jet	1,292	1,636	2,313	5,241	1,607	273	45	1,925	7,166	167,381
Four-engine narrow body jet	692	764	1,174	2,631	213	303	48	564	3,195	274,755
Four-engine wide body jet	1,371	2,296	2,736	6,403	798	473	62	1,333	7,737	144,927
Regional jet under 40 seats	NR	NR	NR	NR	NR	NR	NR	NR	NR	35
Regional jet with 40-59 seats	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Regional jet over 59 seats	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Turboprops under 20 seats	NR	35	NR	35	317	0	0	317	352	147,200
Turboprops with 20 or more seats	607	516	902	2,025	0	365	170	534	2,560	41,926
Piston	NR	NR	NR	NR	NR	NR	NR	NR	NR	75,007
All Aircraft	1,057	1,137	1,637	3,831	703	497	46	1,247	5,077	1,350,920

Source: BTS Form 41 for year-end 1996.

NR = No data reported.

Col 1: Total flight deck and flight attendant costs divided by total block hours.

Col 2: Cost of total fuel and oil consumed divided by total block hours.

Col 3: Maintenance and maintenance overhead (burden) costs divided by total block hours.

Col 4: Columns 1+2+3.

Col 5: Total amortization (for capital leases) and rental charges (for operating leases) divided by total block hours.

Col 6: Total depreciation charges divided by block hours.

Col 7: Total insurance costs divided by total block hours.

Col 8: Columns 5+6+7.

Col 9: Columns 4+8.

Col 10: Block hours reported in Form 41.

Table 4-2B
Large (Form 41) Air Freight Carrier Operating and Fixed Costs Per Airborne Hour

Economic Values Class	Per Airborne Hour									
	(Column 1)	(Column 2)	(Column 3)	(Column 4)	(Column 5)	(Column 6)	(Column 7)	(Column 8)	(Column 9)	(Column 10)
Crew	Fuel & Oil	Maintenance	Total Variable Costs	Rentals	Depreciation	Insurance	Total Fixed Costs	Total Costs	Airborne Hours	
Two-engine narrow body jet	1,179	966	931	3,076	754	702	53	1,508	4,584	100,981
Two-engine wide body jet	1,071	1,145	1,740	3,955	2,257	453	61	2,771	6,727	72,758
Three-engine narrow body jet	1,483	952	1,852	4,288	279	1,050	34	1,363	5,651	249,253
Three-engine wide body jet	1,409	1,785	2,523	5,718	1,753	297	49	2,100	7,818	153,648
Four-engine narrow body jet	797	879	1,352	3,028	245	348	56	649	3,677	238,710
Four-engine wide body jet	1,502	2,515	2,996	7,013	874	518	68	1,460	8,474	132,322
Regional jet under 40 seats	NR	NR	NR	NR	NR	NR	NR	NR	NR	50
Regional jet with 40-59 seats	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Regional jet over 59 seats	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Turboprops under 20 seats	NR	41	NR	41	375	0	0	375	416	129,217
Turboprops with 20 or more seats	672	571	998	2,241	0	404	188	591	2,832	36,175
Piston	NR	NR	NR	NR	NR	NR	NR	NR	NR	64,368
All Aircraft*	1,213	1,304	1,877	4,395	806	571	53	1,430	5,825	1,177,482

Source: BTS Form 41 for year-end 1996.

*Averages calculated using data from carriers reporting both cost and airborne hours; Column 10 data includes hours for carriers not reporting cost data.

Col 1: Total flight deck and flight attendant costs divided by total airborne hours.

Col 2: Cost of total fuel and oil consumed divided by total airborne hours.

Col 3: Maintenance and maintenance overhead (burden) costs divided by total airborne hours.

Col 4: Columns 1+2+3.

Col 5: Total amortization (for capital leases) and rental charges (for operating leases) divided by total airborne hours.

Col 6: Total depreciation charges divided by airborne hours.

Col 7: Total insurance costs divided by total airborne hours.

Col 8: Columns 5+6+7.

Col 9: Columns 4+8.

Col 10: Airborne hours reported in Form 41.

Table 4-3A
Alaskan Form 298-C Carrier Operating and Fixed Costs Per Block Hour

Economic Values Class	Per Block Hour								
	(Column 1)	(Column 2)	(Column 3)	(Column 4)	(Column 5)	(Column 6)	(Column 7)	(Column 8)	(Column 9)
Crew	Fuel & Oil	Maintenance	Total Variable Costs	Depreciation and Rentals	Other	Total Fixed Costs	Total Costs	Block Hours	
Two-engine narrow body jet	68	50	226	344	259	250	509	853	111
Two-engine wide body jet	NR	NR	NR	NR	NR	NR	NR	NR	NR
Three-engine narrow body jet	57	22	55	135	23	25	49	183	878
Three-engine wide body jet	NR	NR	NR	NR	NR	NR	NR	NR	NR
Four-engine narrow body jet	231	181	719	1,132	129	326	455	1,587	580
Four-engine wide body jet	NR	NR	NR	NR	NR	NR	NR	NR	NR
Regional jet under 40 seats	416	282	442	1,140	291	53	344	1,484	1,557
Regional jet with 40-59 seats	NR	NR	NR	NR	NR	NR	NR	NR	NR
Regional jet over 59 seats	NR	NR	NR	NR	NR	NR	NR	NR	NR
Turboprops under 20 seats	98	108	165	371	94	31	125	496	70,463
Turboprops with 20 or more seats	215	268	461	944	91	66	157	1,101	11,991
Piston	54	51	69	174	22	12	34	208	294,247
All Aircraft	69	69	102	240	39	18	57	297	379,827

Source: BTS Form 298-C for year-end 1996.

NR = No data reported.

Col 1: Total flight deck and flight attendant costs divided by total block hours.

Col 2: Cost of total fuel and oil consumed divided by total block hours.

Col 3: Maintenance and maintenance overhead (burden) costs divided by total block hours.

Col 4: Columns 1+2+3.

Col 5: Total amortization (for capital leases), rental charges (for operating leases) and depreciation divided by total block hours.

Col 6: Total other (primarily insurance) costs divided by total block hours.

Col 7: Columns 5+6.

Col 8: Columns 4+7.

Col 9: Block hours reported in 298-C.

Table 4-3B
Alaskan Form 298-C Carrier Operating and Fixed Costs Per Airborne Hour

Economic Values Class	Per Airborne Hour								(Column 9) Per Airborne Hours
	(Column 1) Crew	(Column 2) Fuel & Oil	(Column 3) Maintenance	(Column 4) Total Variable Costs	(Column 5) Rentals	(Column 6) Other	(Column 7) Total Fixed Costs	(Column 8) Total Costs	
Two-engine narrow body jet	85	63	285	433	326	315	641	1,074	88
Two-engine wide body jet	NR	NR	NR	NR	NR	NR	NR	NR	NR
Three-engine narrow body jet	72	28	70	169	30	32	61	231	697
Three-engine wide body jet	NR	NR	NR	NR	NR	NR	NR	NR	NR
Four-engine narrow body jet	292	228	906	1,425	162	411	573	1,999	461
Four-engine wide body jet	NR	NR	NR	NR	NR	NR	NR	NR	NR
Regional jet under 40 seats	524	355	557	1,435	366	67	434	1,869	1,236
Regional jet with 40-59 seats	NR	NR	NR	NR	NR	NR	NR	NR	NR
Regional jet over 59 seats	NR	NR	NR	NR	NR	NR	NR	NR	NR
Turboprops under 20 seats	124	136	208	468	118	39	157	625	55,948
Turboprops with 20 or more seats	270	338	581	1,189	115	83	198	1,387	9,521
Piston	68	64	87	219	28	15	43	262	233,632
All Aircraft	87	87	128	302	49	22	72	374	301,583

Source: BTS Form 41 for year-end 1996.

NR = No data reported.

Col 1: Total flight deck and flight attendant costs divided by total airborne hours.

Col 2: Cost of total fuel and oil consumed divided by total airborne hours.

Col 3: Maintenance and maintenance overhead (burden) costs divided by total airborne hours.

Col 4: Columns 1+2+3.

Col 5: Total amortization (for capital leases), rental charges (for operating leases) and depreciation divided by total airborne hours.

Col 6: Total other (primarily insurance) costs divided by total airborne hours.

Col 7: Columns 5+6.

Col 8: Columns 4+7.

Col 9: Airborne hours estimated as block hours reported in Form 298-C multiplied by the ratio of (airborne hrs/block hrs) reported for commuter operations in Form 41.

Table 4-4A
Non-Alaskan Form 298-C Carrier Operating and Fixed Costs Per Block Hour

Economic Values Class	Per Block Hour								
	(Column 1) Crew	(Column 2) Fuel & Oil	(Column 3) Maintenance	(Column 4) Total Variable Costs	(Column 5) Rentals	(Column 6) Other	(Column 7) Total Fixed Costs	(Column 8) Total Costs	(Column 9) Block Hours
Two-engine narrow body jet	NR	NR	NR	NR	NR	NR	NR	NR	NR
Two-engine wide body jet	NR	NR	NR	NR	NR	NR	NR	NR	NR
Three-engine narrow body jet	NR	NR	NR	NR	NR	NR	NR	NR	NR
Three-engine wide body jet	NR	NR	NR	NR	NR	NR	NR	NR	NR
Four-engine narrow body jet	NR	NR	NR	NR	NR	NR	NR	NR	NR
Four-engine wide body jet	NR	NR	NR	NR	NR	NR	NR	NR	NR
Regional jet under 40 seats	310	474	554	1,338	486	137	623	1,961	535
Regional jet with 40-59 seats	190	287	127	604	405	46	451	1,055	147,443
Regional jet over 59 seats	NR	NR	NR	NR	NR	NR	NR	NR	NR
Turboprops under 20 seats	108	80	139	327	124	24	148	475	370,813
Turboprops with 20 or more seats	157	123	214	494	211	28	239	733	973,201
Piston	42	66	80	188	69	13	83	271	97,774
All aircraft	141	125	180	447	200	28	228	675	1,589,766

Source: BTS Form 298-C for year-end 1996.

NR = No data reported.

Col 1: Total flight deck and flight attendant costs divided by total block hours.

Col 2: Cost of total fuel and oil consumed divided by total block hours.

Col 3: Maintenance and maintenance overhead (burden) costs divided by total block hours.

Col 4: Columns 1+2+3.

Col 5: Total amortization (for capital leases), rental charges (for operating leases) and depreciation divided by total block hours.

Col 6: Total other (primarily insurance) costs divided by total block hours.

Col 7: Columns 5+6.

Col 8: Columns 4+7.

Col 9: Block hours reported in 298-C.

Table 4-4B
Non-Alaskan Form 298-C Carrier Operating and Fixed Costs Per Airborne Hour

Economic Values Class	Per Airborne Hour								(Column 9) Airborne Hours
	(Column 1) Crew	(Column 2) Fuel & Oil	(Column 3) Maintenance	(Column 4) Total Variable Costs	(Column 5) Rentals	(Column 6) Other	(Column 7) Total Fixed Costs	(Column 8) Total Costs	
Two-engine narrow body jet	NR	NR	NR	NR	NR	NR	NR	NR	NR
Two-engine wide body jet	NR	NR	NR	NR	NR	NR	NR	NR	NR
Three-engine narrow body jet	NR	NR	NR	NR	NR	NR	NR	NR	NR
Three-engine wide body jet	NR	NR	NR	NR	NR	NR	NR	NR	NR
Four-engine narrow body jet	NR	NR	NR	NR	NR	NR	NR	NR	NR
Four-engine wide body jet	NR	NR	NR	NR	NR	NR	NR	NR	NR
Regional jet under 40 seats	390	597	698	1,685	612	173	785	2,470	425
Regional jet with 40-59 seats	240	362	160	761	510	58	568	1,329	117,070
Regional jet over 59 seats	NR	NR	NR	NR	NR	NR	NR	NR	NR
Turboprops under 20 seats	136	101	175	412	156	30	187	599	294,426
Turboprops with 20 or more seats	197	155	270	622	265	36	301	923	772,722
Piston	53	83	101	237	87	17	104	342	77,633
All Aircraft	178	157	227	563	252	35	287	850	1,262,276

Source: BTS Form 298-C for year-end 1996.

NR = No data reported.

Col 1: Total flight deck and flight attendant costs divided by total airborne hours.

Col 2: Cost of total fuel and oil consumed divided by total airborne hours.

Col 3: Maintenance and maintenance overhead (burden) costs divided by total airborne hours.

Col 4: Columns 1+2+3.

Col 5: Total amortization (for capital leases), rental charges (for operating leases) and depreciation divided by total airborne hours.

Col 6: Total other (primarily insurance) costs divided by total airborne hours.

Col 7: Columns 5+6.

Col 8: Columns 4+7.

Col 9: Airborne hours estimated as block hours reported in Form 298-C multiplied by the ratio of (airborne hrs/block hrs) reported for commuter operations in Form 41.

More detailed information by aircraft type is provided in Supporting Tables 4-1 through 4-18.

4.2.1 Alternative Ownership Cost

There is a broad mix of aircraft ownership arrangements among carriers and, as a result, fixed accounting charges may not reflect the opportunity costs of ownership. For example, some carriers' fleets may be very new and their accounting costs for ownership (depreciation, amortization) and operating leases (rentals) may reflect recent market conditions. But, other carriers with older fleets will report ownership and lease accounting data that may be significantly out of date. When FAA initiatives cause a temporary or permanent change in air carrier fleets, the benefits (if FAA efficiency improvements result in the carrier being able to produce the same service with fewer aircraft) or costs of fleet changes might better be approximated by operating lease rates for specific air carrier aircraft. These lease rates can be interpreted as the next best use (the opportunity cost) for an aircraft. Current operating lease rates for aircraft types are shown in Table 4-5; more detailed data by aircraft type can be found in Table 4-19.

Table 4-5
Summary CY 1996 Average Monthly Lease Rate
(\$thousands/month, averages weighted by fleet)

Equipment Type	Monthly Lease Rate¹			
	Passenger	Freight		
1. Two-engine narrow body jet	236	106		
2. Two-engine wide body jet	544	552		
3. Three-engine narrow body jet	72	73		
4. Three-engine wide body jet	279	562		
5. Four-engine narrow body jet	60	237		
6. Four-engine wide body jet	646	509		
7. Regional jet under 40 seats ²	NR	NR		
8. Regional jet with 40-59 seats	145	NR		
9. Regional jet over 59 seats ²	NR	NR		
10. Turboprops under 20 seats	22	NR		
11. Turboprops with 20 or more seats, 2 eng	48	NR		
12. Turboprops with 20 or more seats, 4 eng	22	NR		
13. Piston	NR	NR		
All Aircraft	188			
1The operating lease rates are the median values for actual observed transactions in 1996. The rates are for the aircraft only, and exclude such items as deposits, maintenance, fuel and crew costs. Operating leases generally last from one to seven years, with a typical lease running for five years. Rates vary by value, age, condition, term, creditworthiness of lessee and general market conditions. Operating lease rates for newer aircraft are generally a lower percentage of market value because the residual value (the future value at the end of the lease term) is higher for new aircraft than for old.				
2These are primarily planned aircraft not yet in service. While some older aircraft (e.g., Lear jets and DC-9-10's) exist in these classes, no general lease value is estimated for these aircraft.				
NR means no data reported.				
Source: GRA Aviation Specialists, Inc., "The Guide" (Herndon, VA , 1996).				

4.3 GENERAL AVIATION AIRCRAFT

The unit variable costs of general aviation aircraft were derived from analysis of data in *The Aircraft Cost Evaluator*, published by Conklin and deDecker Associates, Inc.⁴ The cost data are available in considerable detail for more than 100 specific aircraft. Following are the variable cost categories included in the Conklin and deDecker database:

- Fuel and fuel additives, assuming fuel prices average \$2.02 per gallon
- Mature level maintenance, based on review of data from operations, factory, National Business Aviation Association (NBAA) and other sources
- Engine allowances, including amortization of overhauls of engines and props
- Crew costs per hour based on average salaries and benefits
- Other direct expenses, including landing fees and small supplies

Fixed costs are also developed in the Conklin and deDecker data. They reflect corporate missions and include typical hangar cost, hull and liability insurance, miscellaneous overhead (recurrent training, weather services, navigation chart services, etc.) and depreciation. The price assumed for calculating depreciation is the new price for the aircraft. Aircraft are depreciated over eight years to a 20 percent residual value. Because fixed costs for GA aircraft are subject to considerable variation, they should be used with care. For example, one would not use such costs on a broad fleet of aircraft. As shown in a number of tables, the fleet of GA aircraft is fairly old, with the majority of the fleet built before 1982. This fleet is largely depreciated and calculating fixed cost as shown in these tables may result in excessive estimates of cost.

Cost estimates were developed from the Conklin and deDecker source data as follows. The costs for the 100 plus aircraft in the source data were assigned as appropriate to a larger list of aircraft types that resulted from analysis of the FAA GA Survey.⁵ An example illustrates the approach. The Cessna 172 (a class 2 aircraft) shows up in *The Aircraft Cost Evaluator* only once, but those cost estimates are applied to some 17 different variants of the Cessna 172 in the full list of aircraft. In Tables 4-6, 4-7 and 4-8, the individual estimates are averaged for the classes shown.

No cost estimates were available through Conklin and deDecker data for aircraft classes 1, 4, 6, 7, 13, 16, 21, and 23 as indicated by NA in Tables 4-6 through 4-8. For classes 4, 6, 7, 13, 16, and 21 this is not a significant problem in that these classes comprised only 1.7 percent of total GA hours in 1995. A cost estimate for Class 1 was not available from *The Aircraft Cost Evaluator* and had to be developed, as explained in notes to the tables. For class 23, which comprises a diverse group including home-built aircraft, experimental aircraft, gliders, and balloons, costs can not be reliably estimated. When analysis requires an estimate of costs for

⁴ Conklin and deDecker Associates, Inc., *The Aircraft Cost Evaluator* (Orleans, MA, Spring, 1997).

⁵ While there were over 100 specific aircraft types in *The Aircraft Cost Evaluator*, there were over 1,200 specific aircraft types identified in the GA Survey.

aircraft in this class, the analyst should undertake a more detailed review of the specific aircraft of interest.

Summary general aviation and air taxi cost data are shown in Table 4-6. Table 4-6 has been divided into three segments: The first page of Table 4-6 reports GA and air taxi costs for all aircraft types; the second page of Table 4-6 reports costs for aircraft built before 1982; the third page of Table 4-6 reports costs for aircraft built in 1982 and beyond. This segregation reflects the changes in the composition of the GA and air taxi fleets since 1982. More detailed information by aircraft type is shown in Table 4-20. Tables 4-7 and 4-8 provide information on the GA and air taxi fleet individually. These tables provide data for total fleet, those built before 1982 and those built in 1982 and beyond.

4.4 MILITARY AIRCRAFT

Military aircraft are summarized in several broad classifications based generally on the aircraft mission. The classes are:

- Turbojet/fan with 3 or more engines—Mostly military transports, fueling aircraft, and bombers
- Turbojet/fan attack/fighter
- Turbojet/fan other—Mostly trainers, and special purpose aircraft
- Turboprops—Mostly observation, patrol and specialty aircraft
- Pistons—Trainer aircraft
- Rotary—Mostly troop transport, attack, and special purpose vertical lift aircraft

Just over half of the military fleet is made up of rotary lift aircraft. Analysts should carefully review the specific military aircraft types that are potentially affected by FAA regulations or air traffic system improvements under review. The only aircraft category for which an estimate of cost was not available was the small fleet of piston aircraft, which are used almost exclusively for training. If an estimate of operating cost is required for this fleet, use the Cessna 172 cost, which is common piston trainer aircraft.

Table 4-6
Estimated GA and Air Taxi Operating and Fixed Costs - Weighted by Hours
All Hours

Group A: All Aircraft Types									
Economic Values Class	(Column 1)	(Column 2)	(Column 3)	(Column 4)	(Column 5)	(Column 6)	(Column 7)	(Column 8)	(Column 9)
	Crew	Fuel & Oil	Maintenance	Variable Operating Costs (Including Crew)	Variable Operating Costs (Excluding Crew)	Annual Fixed Cost Other	Fixed Cost Per Hour	Flight Hours	Total Cost Per Hour (Including Crew)
1 Piston 1-3 Seats	72	19	20	111	39	18,238	46	4,888,517	156
2 Piston 4-9 Seats 1 Eng	72	24	34	130	58	22,698	57	11,716,993	187
3 Piston 4-9 Seats 2 Eng	72	68	93	233	160	60,310	151	2,651,296	383
4 Piston 10-19 Seats 1 Eng	NA	NA	NA	NA	NA	NA	NA	49	NA
5 Piston 10-19 Seats 2 Eng	72	66	89	227	155	52,880	132	144,430	360
6 Piston 20+ Seats 2 Eng	NA	NA	NA	NA	NA	NA	NA	33,856	NA
7 Piston 20+ Seats 4 Eng	NA	NA	NA	NA	NA	NA	NA	3,034	NA
8 Turboprop 1-9 Seats 1 Eng	114	103	110	327	213	178,776	447	299,391	774
9 Turboprop 1-9 Seats 2 Eng	193	147	257	597	404	474,539	1,186	269,755	1,783
10 Turboprop 10-19 Seats 1 Eng	117	109	140	366	249	223,170	558	3,868	924
11 Turboprop 10-19 Seats 2 Eng	201	181	303	685	484	308,172	770	765,381	1,455
12 Turboprop 20+ Seats 2 Eng	205	270	344	819	614	320,856	802	98,662	1,621
13 Turboprop 20+ Seats 4 Eng	NA	NA	NA	NA	NA	NA	NA	NA	NA
14 Turbojet/fan 2 Eng <20,000	244	361	430	1,035	792	623,719	1,559	931,072	2,595
15 Turbojet/fan 2 Eng >=20,000	322	645	642	1,609	1,287	2,137,499	5,344	368,562	6,953
16 Turbojet/fan 3+ Eng <20,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
17 Turbojet/fan 3+ Eng >=20,000	309	609	674	1,592	1,283	2,078,749	5,197	51,447	6,789
18 Turbojet/fan >=65,000	237	544	420	1,201	964	1,776,491	4,441	42,836	5,642
19 Rotor Piston <7,000	89	24	78	191	101	50,214	126	355,599	316
20 Rotor Turbine <7,000	134	60	196	390	256	129,300	323	1,002,095	713
21 Rotor Piston >=7,000	NA	NA	NA	NA	NA	NA	NA	4,854	NA
22 Rotor Turbine >=7,000	186	113	363	662	476	220,774	552	854,615	1,214
23 Other	89	41	153	283	194	75,795	189	960,699	473
All Piston	72	33	45	150	78	30,041	75	19,438,175	226
All Turboprop	181	156	250	587	406	337,326	843	1,437,057	1,431
All Turbojet	266	445	494	1,205	939	1,078,200	2,696	1,394,870	3,900
All Rotor	147	75	242	465	318	152,599	381	2,217,163	846
All Other	NA	NA	NA	NA	NA	NA	NA	960,699	NA
All Aircraft--GA and Air Taxi	102	78	114	294	192	146,514	366	25,447,963	660

Table 4-6 (Continued)
Estimated GA and Air Taxi Operating and Fixed Costs - Weighted by Hours
All Hours

Table 4-6, Group B: Aircraft Built Before 1982									
Economic Values Category	(Column 1) Crew	(Column 2) Fuel & Oil	(Column 3) Maintenance	Variable Operating Costs (Including Crew)	Variable Operating Costs (Excluding Crew)	(Column 6) Annual Fixed Cost Other	(Column 7) Fixed Cost Per Hour	(Column 8) Flight Hours	(Column 9) Total Cost Per Hour (Including Crew)
1 Piston 1-3 Seats	72	19	20	111	39	18,238	46	4,411,991	156
2 Piston 4-9 Seats 1 Eng	72	24	33	129	57	21,300	53	10,496,635	182
3 Piston 4-9 Seats 2 Eng	72	68	92	233	161	58,051	145	2,384,478	378
4 Piston 10-19 Seats 1 Eng	NA	NA	NA	NA	NA	NA	NA	49	NA
5 Piston 10-19 Seats 2 Eng	72	66	89	227	155	52,880	132	92,872	360
6 Piston 20+ Seats 2 Eng	NA	NA	NA	NA	NA	NA	NA	33,856	NA
7 Piston 20+ Seats 4 Eng	NA	NA	NA	NA	NA	NA	NA	3,034	NA
8 Turboprop 1-9 Seats 1 Eng	NA	NA	NA	NA	NA	NA	NA	18,248	NA
9 Turboprop 1-9 Seats 2 Eng	193	150	269	612	419	527,726	1,319	196,026	1,931
10 Turboprop 10-19 Seats 1 Eng	NA	NA	NA	NA	NA	NA	NA	NA	NA
11 Turboprop 10-19 Seats 2 Eng	193	159	306	659	466	189,155	473	484,066	1,132
12 Turboprop 20+ Seats 2 Eng	203	271	346	821	618	239,771	599	18,251	1,420
13 Turboprop 20+ Seats 4 Eng	NA	NA	NA	NA	NA	NA	NA	NA	NA
14 Turbojet/fan 2 Eng <20,000	237	371	483	1,092	855	366,466	916	328,802	2,008
15 Turbojet/fan 2 Eng >=20,000	281	461	599	1,340	1,060	720,102	1,800	178,561	3,141
16 Turbojet/fan 3+ Eng <20,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
17 Turbojet/fan 3+ Eng >=20,000	280	692	768	1,740	1,460	1,273,514	3,184	14,150	4,924
18 Turbojet/fan >=65,000	NA	NA	NA	NA	NA	NA	NA	27,684	NA
19 Rotor Piston <7,000	89	40	151	280	191	74,936	187	139,352	467
20 Rotor Turbine <7,000	138	58	192	389	251	128,412	321	454,741	710
21 Rotor Piston >=7,000	NA	NA	NA	NA	NA	NA	NA	4,854	NA
22 Rotor Turbine >=7,000	298	205	664	1,166	869	420,965	1,052	195,172	2,219
23 Other	89	41	153	283	194	75,795	189	316,395	473
All Piston	72	32	45	149	77	28,408	71	17,422,915	220
All Turboprop	193	159	290	643	449	347,550	869	716,591	1,512
All Turbojet	251	413	530	1,194	943	511,235	1,278	549,196	2,472
All Rotor	147	69	227	444	296	148,325	371	794,120	815
All Other	89	41	153	283	194	75,795	189	316,395	473
All Average--GA and Air Taxi	84	49	74	206	122	57,387	143	19,799,218	350

Table 4-6 (Continued)
Estimated GA and Air Taxi Operating and Fixed Costs - Weighted by Hours
All Hours

Table 4-6, Group C: Aircraft Built in 1982 and Beyond									
Economic Values Category	(Column 1) Crew	(Column 2) Fuel & Oil	(Column 3) Maintenance	(Column 4) Variable Operating Costs (Including Crew)	(Column 5) Variable Operating Costs (Excluding Crew)	(Column 6) Annual Fixed Cost Other	(Column 7) Fixed Cost Per Hour	(Column 8) Flight Hours	(Column 9) Total Cost Per Hour (Including Crew)
1 Piston 1-3 Seats	72	19	20	111	39	18,238	46	476,526	156
2 Piston 4-9 Seats 1 Eng	72	30	40	142	70	36,085	90	1,220,358	232
3 Piston 4-9 Seats 2 Eng	72	65	94	232	160	83,548	209	266,818	441
4 Piston 10-19 Seats 1 Eng	NA	NA	NA	NA	NA	NA	NA	NA	NA
5 Piston 10-19 Seats 2 Eng	72	66	89	227	155	52,880	132	51,558	360
6 Piston 20+ Seats 2 Eng	NA	NA	NA	NA	NA	NA	NA	NA	NA
7 Piston 20+ Seats 4 Eng	NA	NA	NA	NA	NA	NA	NA	NA	NA
8 Turboprop 1-9 Seats 1 Eng	114	103	110	327	213	178,776	447	281,143	774
9 Turboprop 1-9 Seats 2 Eng	193	141	234	568	375	372,634	932	73,729	1,499
10 Turboprop 10-19 Seats 1 Eng	117	109	140	366	249	223,170	558	3,868	924
11 Turboprop 10-19 Seats 2 Eng	209	205	299	712	504	433,927	1,085	281,315	1,797
12 Turboprop 20+ Seats 2 Eng	223	255	317	795	572	1,158,423	2,896	80,411	3,691
13 Turboprop 20+ Seats 4 Eng	NA	NA	NA	NA	NA	NA	NA	NA	NA
14 Turbojet/fan 2 Eng <20,000	246	358	413	1,017	771	706,411	1,766	602,270	2,783
15 Turbojet/fan 2 Eng >=20,000	338	718	659	1,715	1,377	2,695,104	6,738	190,001	8,452
16 Turbojet/fan 3+ Eng <20,000	NA	NA	NA	NA	NA	NA	NA	953	NA
17 Turbojet/fan 3+ Eng >=20,000	319	582	643	1,543	1,224	2,347,437	5,869	37,296	7,412
18 Turbojet/fan >=65,000	237	544	420	1,201	964	1,776,491	4,441	15,152	5,642
19 Rotor Piston <7,000	89	22	67	177	88	46,517	116	208,286	293
20 Rotor Turbine <7,000	129	63	199	392	262	130,318	326	547,354	717
21 Rotor Piston >=7,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
22 Rotor Turbine >=7,000	178	107	344	629	451	207,835	520	659,443	1,149
23 Other	NA	NA	NA	NA	NA	NA	NA	644,304	NA
All Piston	72	38	52	162	90	45,023	113	2,015,259	275
All Turboprop	172	155	218	545	374	333,101	833	697,586	1,378
All Turbojet	271	451	479	1,201	930	1,254,362	3,136	845,696	4,337
All Rotor	147	78	250	476	329	155,380	388	1,411,814	864
All Other	NA	NA	NA	NA	NA	NA	NA	639,271	NA
All Average--GA and Air Taxi	159	172	242	573	414	426,993	1,067	5,569,437	1,640

Source: Conklin and DeDecker, *Aircraft Cost Evaluator*, Spring, 1997;

Category 1 aircraft costs are based on known fuel burn of 9.4 gallons per hour for this type (GAMA DATABOOK, 1998), and maintenance costs analogous to the 1989 relationship between category 1 and category 2 pistons, and an assumption that crew cost would be the same as for category 2 aircraft.

Note: NA indicates that the population for which costs were available was insufficient to provide reliable results.

Col 1: Crew cost includes salaries and benefits, and assumes 492 hours per year crew use. The crew salaries and benefits are from Conklin and DeDecker, and the 492 hours is based on a survey done for FAA in 1991 that shows that non-airline professional pilots with a Class 1 medical certificate flew an average of 492 hours per year.

Col 2: Fuel, oil and additives used per hour, with fuel at \$2.02 per gallon.

Col 3: Total maintenance cost, including labor, parts, engine allowances, propeller/thrust reverser overhaul, and APU overhaul if applicable.

Col 4: Variable operating cost total. Addition of columns 1, 2 and 3.

Col 5: Maintenance and Fuel only (Col. 2 plus Col. 3)

Col 6: Annual fixed cost including hanger cost, insurance costs, training cost, services typically used by air taxi and commercial operators (e.g., Weather service, maintenance programs) and book depreciation (using a formula of 8 year life to 20 percent residual).

Col 7: Fixed cost per hour, assuming utilization of 400 hours per year.

Col 8: Total Annual Flight Hours (See Section 3).

Col 9: Col. 4 plus Col. 7.

Table 4-7
Estimated GA Operating and Fixed Costs - Weighted by Hours
GA Hours

Group A: All Aircraft Types									
Economic Values Category	(Column 1)	(Column 2)	(Column 3)	(Column 4)	(Column 5)	(Column 6)	(Column 7)	(Column 8)	(Column 9)
	Crew	Fuel & Oil	Maintenance	Variable Operating Costs (Including Crew)	Variable Operating Costs (Excluding Crew)	Annual Fixed Cost Other	Fixed Cost Per Hour	Flight Hours	Total Cost Per Hour (Including Crew)
1 Piston 1-3 Seats	72	19	20	111	39	18,238	46	4,881,821	156
2 Piston 4-9 Seats 1 Eng	72	24	34	130	58	22,623	57	11,463,869	187
3 Piston 4-9 Seats 2 Eng	72	68	94	233	161	59,359	148	2,156,015	382
4 Piston 10-19 Seats 1 Eng	NA	NA	NA	NA	NA	NA	NA	49	NA
5 Piston 10-19 Seats 2 Eng	72	66	89	227	155	52,880	132	70,374	360
6 Piston 20+ Seats 2 Eng	NA	NA	NA	NA	NA	NA	NA	16,700	NA
7 Piston 20+ Seats 4 Eng	NA	NA	NA	NA	NA	NA	NA	3,034	NA
8 Turboprop 1-9 Seats 1 Eng	104	87	111	302	198	183,749	459	200,546	761
9 Turboprop 1-9 Seats 2 Eng	193	147	257	596	403	470,790	1,177	255,899	1,773
10 Turboprop 10-19 Seats 1 Eng	117	110	157	384	267	248,150	620	2,501	1,004
11 Turboprop 10-19 Seats 2 Eng	202	186	295	683	481	336,584	841	612,865	1,525
12 Turboprop 20+ Seats 2 Eng	205	270	344	819	614	320,856	802	93,078	1,621
13 Turboprop 20+ Seats 4 Eng	NA	NA	NA	NA	NA	NA	NA	NA	NA
14 Turbojet/fan 2 Eng <20,000	246	360	430	1,036	790	645,249	1,613	825,623	2,649
15 Turbojet/fan 2 Eng >=20,000	323	654	645	1,622	1,298	2,189,042	5,473	341,263	7,094
16 Turbojet/fan 3+ Eng <20,000	NA	NA	NA	NA	NA	NA	NA	953	NA
17 Turbojet/fan 3+ Eng >=20,000	309	609	676	1,594	1,284	2,083,796	5,209	50,652	6,803
18 Turbojet/fan >=65,000	237	544	420	1,201	964	1,776,491	4,441	42,836	5,642
19 Rotor Piston <7,000	89	24	78	191	101	50,214	126	355,599	316
20 Rotor Turbine <7,000	134	60	193	387	253	128,038	320	908,807	707
21 Rotor Piston >=7,000	NA	NA	NA	NA	NA	NA	NA	4,854	NA
22 Rotor Turbine >=7,000	158	99	308	565	407	217,711	544	685,320	1,110
23 Other	NA	NA	NA	NA	NA	NA	NA	960,683	NA
All Piston	72	31	43	146	74	28,203	71	18,591,861	216
All Turboprop	193	165	269	627	435	384,204	961	1,164,888	1,588
All Turbojet	269	451	498	1,218	949	1,132,518	2,831	1,261,328	4,050
All Rotor	134	67	212	413	279	144,875	362	1,954,579	775
All Other	NA	NA	NA	NA	NA	NA	NA	960,683	NA
Average for GA Fleet	100	75	107	283	183	147,186	368	23,933,340	651

Table 4-7 (Continued)
Estimated GA Operating and Fixed Costs - Weighted by Hours
GA Hours

Table 4-7, Group B: Aircraft Built Before 1982									
Economic Values Category	Crew	Fuel & Oil	Maintenance	Variable Operating Costs (Including Crew)	Variable Operating Costs (Excluding Crew)	Annual Fixed Cost Other	Fixed Cost Per Hour	Flight Hours	Total Cost Per Hour (Including Crew)
1 Piston 1-3 Seats	72	19	156	111	39	18,238	46	4,405,295	156
2 Piston 4-9 Seats 1 Eng	72	24	187	129	57	21,251	53	10,263,904	182
3 Piston 4-9 Seats 2 Eng	72	68	382	233	161	56,203	141	1,908,359	373
4 Piston 10-19 Seats 1 Eng	NA	NA	NA	NA	NA	NA	NA	NA	NA
5 Piston 10-19 Seats 2 Eng	72	66	360	227	155	52,880	132	20,543	360
6 Piston 20+ Seats 2 Eng	NA	NA	NA	NA	NA	NA	NA	16,700	NA
7 Piston 20+ Seats 4 Eng	NA	NA	NA	NA	NA	NA	NA	3,034	NA
8 Turboprop 1-9 Seats 1 Eng	NA	NA	NA	NA	NA	NA	NA	18,248	NA
9 Turboprop 1-9 Seats 2 Eng	193	150	1,773	612	419	523,895	1,310	182,170	1,921
10 Turboprop 10-19 Seats 1 Eng	NA	NA	NA	NA	NA	NA	NA	NA	NA
11 Turboprop 10-19 Seats 2 Eng	193	159	1,525	643	450	195,731	489	367,019	1,133
12 Turboprop 20+ Seats 2 Eng	203	271	1,621	821	618	239,771	599	12,667	1,420
13 Turboprop 20+ Seats 4 Eng	NA	NA	NA	NA	NA	NA	NA	NA	NA
14 Turbojet/fan 2 Eng <20,000	239	354	2,649	1,061	822	385,061	963	277,958	2,023
15 Turbojet/fan 2 Eng >=20,000	281	469	7,094	1,352	1,071	725,289	1,813	156,514	3,165
16 Turbojet/fan 3+ Eng <20,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
17 Turbojet/fan 3+ Eng >=20,000	280	692	6,803	1,740	1,460	1,273,514	3,184	14,150	4,924
18 Turbojet/fan >=65,000	NA	NA	NA	NA	NA	NA	NA	27,684	NA
19 Rotor Piston <7,000	89	40	316	280	191	74,936	187	139,352	467
20 Rotor Turbine <7,000	138	58	707	389	251	128,398	321	431,275	710
21 Rotor Piston >=7,000	NA	NA	NA	NA	NA	NA	NA	4,854	NA
22 Rotor Turbine >=7,000	274	160	1,110	970	696	470,450	1,176	186,356	2,146
23 Other	89	41	473	283	194	75,795	189	316,394	473
All Piston	72	30	216	144	72	26,359	66	16,617,882	210
All Turboprop	193	159	1,588	634	440	374,082	935	580,104	1,569
All Turbojet	253	408	4,050	1,185	932	535,987	1,340	476,307	2,525
All Rotor	143	63	775	415	273	144,881	362	761,838	778
All Other	NA	NA	NA	NA	NA	NA	NA	316,394	NA
All Aircraft--GA Fleet	83	45	651	196	113	54,750	137	18,752,525	333

Table 4-7 (Continued)
Estimated GA Operating and Fixed Costs - Weighted by Hours
GA Hours

Table 4-7, Group C: Aircraft Built in 1982 and Beyond									
Economic Values Category	(Column 1) Crew	(Column 2) Fuel & Oil	(Column 3) Maintenance	(Column 4) Variable Operating Costs (Including Crew)	(Column 5) Variable Operating Costs (Excluding Crew)	(Column 6) Annual Fixed Cost Other	(Column 7) Fixed Cost Per Hour	(Column 8) Flight Hours	(Column 9) Total Cost Per Hour (Including Crew)
1 Piston 1-3 Seats	72	19	20	111	39	18,238	46	476,526	156
2 Piston 4-9 Seats 1 Eng	72	30	40	142	70	35,806	90	1,199,965	231
3 Piston 4-9 Seats 2 Eng	72	66	99	238	166	86,232	216	247,656	454
4 Piston 10-19 Seats 1 Eng	NA	NA	NA	NA	NA	NA	NA	NA	NA
5 Piston 10-19 Seats 2 Eng	72	66	89	227	155	52,880	132	49,831	360
6 Piston 20+ Seats 2 Eng	NA	NA	NA	NA	NA	NA	NA	NA	NA
7 Piston 20+ Seats 4 Eng	NA	NA	NA	NA	NA	NA	NA	NA	NA
8 Turboprop 1-9 Seats 1 Eng	104	87	111	302	198	183,749	459	182,298	761
9 Turboprop 1-9 Seats 2 Eng	193	141	234	568	375	372,634	932	73,729	1,499
10 Turboprop 10-19 Seats 1 Eng	117	110	157	384	267	248,150	620	2,501	1,004
11 Turboprop 10-19 Seats 2 Eng	209	207	298	714	505	445,323	1,113	245,846	1,828
12 Turboprop 20+ Seats 2 Eng	223	255	317	795	572	1,158,423	2,896	80,411	3,691
13 Turboprop 20+ Seats 4 Eng	NA	NA	NA	NA	NA	NA	NA	NA	NA
14 Turbojet/fan 2 Eng <20,000	248	362	419	1,029	781	721,657	1,804	547,665	2,833
15 Turbojet/fan 2 Eng >=20,000	338	717	659	1,714	1,376	2,690,960	6,727	184,749	8,442
16 Turbojet/fan 3+ Eng <20,000	NA	NA	NA	NA	NA	NA	NA	953	NA
17 Turbojet/fan 3+ Eng >=20,000	320	581	644	1,544	1,224	2,360,056	5,900	36,501	7,444
18 Turbojet/fan >=65,000	237	544	420	1,201	964	1,776,491	4,441	15,153	5,642
19 Rotor Piston <7,000	89	22	67	177	88	46,517	116	216,247	293
20 Rotor Turbine <7,000	128	61	194	384	256	127,598	319	477,531	703
21 Rotor Piston >=7,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
22 Rotor Turbine >=7,000	152	96	295	542	390	203,077	508	498,964	1,050
23 Other	NA	NA	NA	NA	NA	NA	NA	644,290	NA
All Piston	72	38	52	162	89	44,516	111	1,973,979	273
All Turboprop	192	173	256	620	429	394,774	987	584,784	1,607
All Turbojet	274	464	491	1,229	955	1,313,574	3,284	785,021	4,513
All Rotor	131	69	213	412	281	144,872	362	1,192,741	774
All Other	NA	NA	NA	NA	NA	NA	NA	644,290	NA
All Aircraft--GA Fleet	156	177	238	571	415	455,480	1,139	5,180,815	1,710

Source: Conklin and DeDecker, Aircraft Cost Evaluator, Spring, 1997;

Category 1 aircraft costs are based on known fuel burn of 9.4 gallons per hour for this type (GAMA DATABOOK, 1998), and maintenance costs analogous to the 1989 relationship between category 1 and category 2 pistons, and an assumption that crew cost would be the same as for category 2 aircraft.

Note: NA indicates that the population for which costs were available was insufficient to provide reliable results.

Col 1: Crew cost includes salaries and benefits, and assumes 492 hours per year crew use. The crew salaries and benefits are from Conklin and DeDecker, and the 492 hours is based on a survey done for FAA in 1991 that shows that non-airline professional pilots with a Class 1 medical certificate flew an average of 492 hours per year.

Col 2: Fuel, oil and additives used per hour, with fuel at \$2.02 per gallon.

Col 3: Total maintenance cost, including labor, parts, engine allowances, propeller/thrust reverser overhaul, and APU overhaul if applicable.

Col 4: Variable operating cost total. Addition of columns 1, 2 and 3.

Col 5: Maintenance and Fuel only (Col. 2 plus Col. 3)

Col 6: Annual fixed cost including hanger cost, insurance costs, training cost, services typically used by air taxi and commercial operators (e.g., Weather service, maintenance programs) and book depreciation (using a formula of 8 year life to 20 percent residual).

Col 7: Fixed cost per hour, assuming utilization of 400 hours per year.

Col 8: Total Annual Flight Hours (See Section 3).

Col 9: Col. 4 plus Col. 7.

Table 4-8
Estimated Air Taxi Operating and Fixed Costs - Weighted by Hours
Air Taxi Hours

Group A: All Aircraft Types									
Economic Values Category	(Column 1)	(Column 2)	(Column 3)	(Column 4)	(Column 5)	(Column 6)	(Column 7)	(Column 8)	(Column 9)
	Crew	Fuel & Oil	Maintenance	Variable Operating Costs (Including Crew)	Variable Operating Costs (Excluding Crew)	Annual Fixed Cost Other	Fixed Cost Per Hour	Flight Hours	Total Cost Per Hour (Including Crew)
1 Piston 1-3 Seats	72	19	20	111	39	18,238	46	6,696	156
2 Piston 4-9 Seats 1 Eng	72	28	37	136	64	26,647	67	253,124	203
3 Piston 4-9 Seats 2 Eng	72	68	90	230	158	62,978	157	495,281	388
4 Piston 10-19 Seats 1 Eng	NA	NA	NA	NA	NA	NA	NA	NA	NA
5 Piston 10-19 Seats 2 Eng	72	66	89	227	155	52,880	132	74,056	360
6 Piston 20+ Seats 2 Eng	NA	NA	NA	NA	NA	NA	NA	17,156	NA
7 Piston 20+ Seats 4 Eng	NA	NA	NA	NA	NA	NA	NA	NA	NA
8 Turboprop 1-9 Seats 1 Eng	117	108	110	334	217	177,419	444	98,845	778
9 Turboprop 1-9 Seats 2 Eng	193	153	273	619	426	632,464	1,581	13,856	2,200
10 Turboprop 10-19 Seats 1 Eng	117	108	110	334	217	177,419	444	1,367	778
11 Turboprop 10-19 Seats 2 Eng	193	161	337	692	498	180,047	450	152,516	1,142
12 Turboprop 20+ Seats 2 Eng	NA	NA	NA	NA	NA	NA	NA	5,584	NA
13 Turboprop 20+ Seats 4 Eng	NA	NA	NA	NA	NA	NA	NA	NA	NA
14 Turbojet/fan 2 Eng <20,000	225	369	434	1,029	803	457,676	1,144	105,448	2,173
15 Turbojet/fan 2 Eng >=20,000	290	465	583	1,338	1,048	1,034,807	2,587	27,299	3,925
16 Turbojet/fan 3+ Eng <20,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
17 Turbojet/fan 3+ Eng >=20,000	280	626	596	1,501	1,222	1,767,962	4,420	795	5,921
18 Turbojet/fan >=65,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
19 Rotor Piston <7,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
20 Rotor Turbine <7,000	138	71	225	433	296	144,934	362	93,288	796
21 Rotor Piston >=7,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
22 Rotor Turbine >=7,000	275	158	546	979	704	230,844	577	169,295	1,557
23 Other	NA	NA	NA	NA	NA	NA	NA	15	NA
All Piston	72	59	78	210	138	54,234	136	846,314	346
All Turboprop	145	127	192	464	319	192,445	481	272,169	945
All Turbojet	234	383	453	1,069	836	537,646	1,344	133,542	2,413
All Rotor	237	134	457	827	590	206,929	517	262,584	1,345
All Other	NA	NA	NA	NA	NA	NA	NA	NA	NA
All Aircraft-Air Taxi Fleet	121	109	182	411	290	139,538	349	1,514,623	760

Table 4-8 (Continued)
Estimated Air Taxi Operating and Fixed Costs - Weighted by Hours
Air Taxi Hours

Table 4-8, Group B: Aircraft Built Before 1982									
Economic Values Category	Crew	Fuel & Oil	Maintenance	Variable Operating Costs (Including Crew)	Variable Operating Costs (Excluding Crew)	Annual Fixed Cost Other	Fixed Cost Per Hour	Flight Hours	Total Cost Per Hour (Including Crew)
1 Piston 1-3 Seats	72	19	20	111	39	18,238	46	6,696	156
2 Piston 4-9 Seats 1 Eng	72	27	35	134	62	23,929	60	232,732	194
3 Piston 4-9 Seats 2 Eng	72	69	91	232	160	62,901	157	476,119	389
4 Piston 10-19 Seats 1 Eng	NA	NA	NA	NA	NA	NA	NA	NA	NA
5 Piston 10-19 Seats 2 Eng	72	66	89	227	155	52,880	132	72,329	360
6 Piston 20+ Seats 2 Eng	NA	NA	NA	NA	NA	NA	NA	17,156	NA
7 Piston 20+ Seats 4 Eng	NA	NA	NA	NA	NA	NA	NA	NA	NA
8 Turboprop 1-9 Seats 1 Eng	NA	NA	NA	NA	NA	NA	NA	NA	NA
9 Turboprop 1-9 Seats 2 Eng	193	153	273	619	426	632,464	1,581	13,856	2,200
10 Turboprop 10-19 Seats 1 Eng	NA	NA	NA	NA	NA	NA	NA	NA	NA
11 Turboprop 10-19 Seats 2 Eng	193	161	340	694	501	174,234	436	117,047	1,130
12 Turboprop 20+ Seats 2 Eng	NA	NA	NA	NA	NA	NA	NA	NA	NA
13 Turboprop 20+ Seats 4 Eng	NA	NA	NA	NA	NA	NA	NA	NA	NA
14 Turbojet/fan 2 Eng <20,000	226	452	560	1,238	1,012	278,138	695	50,843	1,933
15 Turbojet/fan 2 Eng >=20,000	280	412	574	1,266	985	687,150	1,718	22,046	2,984
16 Turbojet/fan 3+ Eng <20,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
17 Turbojet/fan 3+ Eng >=20,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
18 Turbojet/fan >=65,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
19 Rotor Piston <7,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
20 Rotor Turbine <7,000	138	59	193	390	252	128,697	322	23,466	712
21 Rotor Piston >=7,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
22 Rotor Turbine >=7,000	351	305	951	1,607	1,256	310,114	775	8,816	2,382
23 Other	NA	NA	NA	NA	NA	NA	NA	1	NA
Piston Average	72	60	80	212	140	54,056	135	805,033	347
Turboprop Average	193	160	334	687	494	218,197	545	136,487	1,232
Turbojet/fan Average	239	442	564	1,245	1,006	375,486	939	72,890	2,183
Rotor Average	219	152	481	852	633	197,543	494	32,282	1,346
Other Average	NA	NA	NA	NA	NA	NA	NA	1	NA
Average for Air Taxi Fleet	95	91	137	323	228	88,014	220	1,046,693	543

Table 4-8 (Continued)
Estimated Air Taxi Operating and Fixed Costs - Weighted by Hours
Air Taxi Hours

Table 4-8, Group C: Aircraft Built in 1982 and Beyond									
Economic Values Category	(Column 1) Crew	(Column 2) Fuel & Oil	(Column 3) Maintenance	Variable Operating Costs (Including Crew)	Variable Operating Costs (Excluding Crew)	(Column 6) Annual Fixed Cost Other	(Column 7) Fixed Cost Per Hour	(Column 8) Flight Hours	Total Cost Per Hour (Including Crew)
1 Piston 1-3 Seats	72	19	20	111	39	18,238	46	NR	156
2 Piston 4-9 Seats 1 Eng	72	36	46	154	82	48,609	122	20,393	276
3 Piston 4-9 Seats 2 Eng	72	56	60	188	116	64,733	162	19,162	350
4 Piston 10-19 Seats 1 Eng	NA	NA	NA	NA	NA	NA	NA	NA	NA
5 Piston 10-19 Seats 2 Eng	72	66	89	227	155	52,880	132	1,726	360
6 Piston 20+ Seats 2 Eng	NA	NA	NA	NA	NA	NA	NA	NA	NA
7 Piston 20+ Seats 4 Eng	NA	NA	NA	NA	NA	NA	NA	NA	NA
8 Turboprop 1-9 Seats 1 Eng	117	108	110	334	217	177,419	444	98,845	778
9 Turboprop 1-9 Seats 2 Eng	NA	NA	NA	NA	NA	NA	NA	NA	NA
10 Turboprop 10-19 Seats 1 Eng	117	108	110	334	217	177,419	444	1,367	778
11 Turboprop 10-19 Seats 2 Eng	195	166	317	678	483	217,595	544	35,469	1,222
12 Turboprop 20+ Seats 2 Eng	NA	NA	NA	NA	NA	NA	NA	NA	NA
13 Turboprop 20+ Seats 4 Eng	NA	NA	NA	NA	NA	NA	NA	NA	NA
14 Turbojet/fan 2 Eng <20,000	225	321	360	906	681	562,468	1,406	54,605	2,312
15 Turbojet/fan 2 Eng >=20,000	352	792	640	1,784	1,432	3,165,755	7,914	5,253	9,699
16 Turbojet/fan 3+ Eng <20,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
17 Turbojet/fan 3+ Eng >=20,000	280	626	596	1,501	1,222	1,767,962	4,420	795	5,921
18 Turbojet/fan >=65,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
19 Rotor Piston <7,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
20 Rotor Turbine <7,000	138	77	241	456	318	153,320	383	69,823	839
21 Rotor Piston >=7,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
22 Rotor Turbine >=7,000	269	145	511	925	656	223,918	560	160,479	1,484
23 Other	NA	NA	NA	NA	NA	NA	NA	14	NA
All Piston	72	48	56	176	104	57,275	143	41,281	319
All Turboprop	122	112	123	357	235	180,112	450	135,681	808
All Turbojet	230	339	372	941	711	656,283	1,641	60,652	2,582
All Rotor	240	130	452	823	583	208,622	522	230,302	1,345
All Other	NA	NA	NA	NA	NA	NA	NA	14	NA
All Average-Air Taxi	179	148	280	607	428	253,207	633	467,930	1,240

Source: Conklin and DeDecker, Aircraft Cost Evaluator, Spring, 1997;

Category 1 aircraft costs are based on known fuel burn of 9.4 gallons per hour for this type (GAMA DATABOOK, 1998), and maintenance costs analogous to the 1989 relationship between category 1 and category 2 pistons, and an assumption that crew cost would be the same as for category 2 aircraft.

Note: NA indicates that the population for which costs were available was insufficient to provide reliable results.

Col 1: Crew cost includes salaries and benefits, and assumes 492 hours per year crew use. The crew salaries and benefits are from Conklin and DeDecker, and the 492 hours is based on a survey done for FAA in 1991 that shows that non-airline professional pilots with a Class 1 medical certificate flew an average of 492 hours per year.

Col 2: Fuel, oil and additives used per hour, with fuel at \$2.02 per gallon.

Col 3: Total maintenance cost, including labor, parts, engine allowances, propeller/thrust reverser overhaul, and APU overhaul if applicable.

Col 4: Variable operating cost total. Addition of columns 1, 2 and 3.

Col 5: Maintenance and Fuel only (Col. 2 plus Col. 3)

Col 6: Annual fixed cost including hanger cost, insurance costs, training cost, services typically used by air taxi and commercial operators (e.g., Weather service, maintenance programs) and book depreciation (using a formula of 8 year life to 20 percent residual).

Col 7: Fixed cost per hour, assuming utilization of 400 hours per year.

Col 8: Total Annual Flight Hours (See Section 3).

Col 9: Col. 4 plus Col. 7.

Variable operating costs for military aircraft were obtained from the military services. Military data include maintenance, fuel and oil, and other variable costs. No fixed costs or cost of ownership are included. Air Force data were obtained from Air Force Financial Management sources.⁶ Army data were obtained from Department of the Army, Cost and Economic Analysis Center.⁷ The Department of the Navy, Office of the Budget provided Navy data.

Military fixed costs and cost of ownership are not available, and in any case are generally not relevant for purposes of analyzing FAA regulatory or system changes. Most military fixed costs are sunk, and military requirements and resources, not differences in fixed cost of operation, dominate decisions on equipment purpose and use.

Military operating costs are summarized in Table 4-9 and shown in detail in Table 4-21.

**Table 4-9
Summary of Military Direct Operating Cost
Fleet as of December 1996**

Economic Values Class	Number in Fleet	Average Cost Per Hour
Turbojet/fan 3+ engines	1,250	\$3,918
Turbojet/fan attack/fighter	4,663	\$2,981
Turbojet/fan other	1,674	\$796
Turboprop	2,371	\$1,408
Piston engine	91	\$45
Fixed wing total	10,049	\$2,336
Rotary aircraft total	10,354	\$883
Total military fleet	20,403	\$1,599

Source: Military service data cited in text.

4.5 PROFILES

Table 4-10 summarizes operating and fixed cost data for profiles of scheduled, non-scheduled commercial and non-commercial user groups. Because of variations in reporting, the profiles are presented on a per airborne hour basis only.

⁶ Air Force data were available through an Internet web site, <http://www.saffm.hq.af.mil/saffm>. Reference AFI 65-503, Table A3-1.

⁷ Army data were available on a web site, <http://www.asafm.army.mil/pubs/cdfs>.

Table 4-10
Operating and Fixed Cost Profiles Per Airborne Hour

	(Column 1)	(Column 2)	(Column 3)	(Column 4)	(Column 5)	(Column 6)	(Column 7)	(Column 8)	(Column 9)	(Column 10)
	Crew	Fuel and Oil	Maintenance	Total Variable Costs	Rentals and Depreciation	Insurance	Total Fixed Costs	Total Costs	Airborne Hours	Block Hours
Scheduled commercial service										
Passengers	933	743	577	2,253	548	15	563	2,816	14,269,090	17,120,549
Freight only	1,213	1,304	1,877	4,394	1,377	53	1,430	5,824	1,177,482	1,350,920
All combined	950	776	653	2,379	597	18	615	2,994	15,446,572	18,471,469
Air Carrier without Commuters										
Passengers	1,117	890	662	2,669	624	14	638	3,307	11,476,924	13,577,584
Freight only	1,238	1,334	1,917	4,489	1,408	51	1,459	5,948	947,672	1,086,752
All combined	1,125	921	749	2,795	678	16	694	3,489	12,424,596	14,664,336
Commuter only										
Passengers	178	139	231	548	238	23	261	809	2,792,166	3,542,965
Freight only	406	361	603	1,370	392	113	505	1,875	229,810	264,168
All combined	180	142	234	556	240	23	263	819	3,021,976	3,807,133
Non-scheduled commercial (air taxi)	121	109	182	411	NR	NR	348	759	1,514,623	NA
Non-commercial (GA and military)										
GA and air taxi	102	78	114	294	NR	NR	366	660	25,447,963	NA
GA only	NA	75	107	182	NR	NR	368	550	23,933,340	NA
Military	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR

NA: Not applicable.

NR = No data reported.

Col 1: For scheduled services: flight deck and cabin crew reported on Form 41 and Form 298-C; for GA, crew costs are excluded; for air taxi, crew cost includes salaries and benefits for flight crew assuming 492 hours per year as reported by Conklin and DeDecker.

Col 2: For scheduled services, fuel and oil consumed as reported on Form 41 and Form 298-C; for GA and air taxi, fuel, oil and additives used per hour assuming \$2.02 per gallon as reported by Conklin and DeDecker.

Col 3: For scheduled services, maintenance and maintenance burden as reported on Form 41 and Form 298-C; for GA and air taxi, maintenance costs reported by Conklin and DeDecker.

Col 4: Columns 1+2+3: for military aircraft, the direct operating cost per hour as reported by the individual services.

Col 5: For scheduled services, amortization (for capital leases), rental charges (for operating leases) and depreciation as reported on Forms 41 and 298-C.

Col 6: For scheduled services, insurance as reported in Form 41 and other costs as reported on Form 298-C.

Col 7: For scheduled services, columns 5+6: for GA and air taxi, hangar, insurance, training, outside services (e.g., weather) and book depreciation as reported by Conklin and DeDecker.

Col 8: Columns 4+7.

Col 9: Airborne (flight) hours reported on Form 41 and Form 298-C for scheduled service: General Aviation and Air Taxi Activity and Avionics Survey, Calender Year 1995 for GA and air taxi. Note: Airborne hours are estimated for 298-C carriers based on the ratio of airborne hours to block hours for commuter carriers reporting on Form 41.

Col 10: Block hours reported on Form 41 and Form 298-C for scheduled service.

SUPPORTING TABLES

OPERATING AND FIXED COSTS

Table 4-11
Detail Supporting Table 4-1A
Large (Form 41) Carrier Operating and Fixed Costs Per Block Hour

Economic Values Class	Per Block Hour									
	(Column 1)	(Column 2)	(Column 3)	(Column 4)	(Column 5)	(Column 6)	(Column 7)	(Column 8)	(Column 9)	(Column 10)
Crew	Fuel & Oil	Maintenance	Total Variable Costs	Rentals	Depreciation	Insurance	Total Fixed Costs	Total Costs	Block Hours	
Two-engine narrow body jet	777	554	429	1,760	320	133	11	464	2,224	9,622,195
A320-1/2	866	530	339	1,736	537	81	13	632	2,368	442,582
B-737-1/2	703	527	539	1,769	106	109	5	220	1,989	954,174
B-737-2C	574	525	748	1,846	110	119	7	236	2,082	98,762
B-737-3	691	505	431	1,628	417	93	11	520	2,148	1,858,836
B-737-4	845	531	261	1,637	586	74	22	683	2,319	310,134
B-737-5	552	471	386	1,409	319	115	10	445	1,854	448,452
B-757	1,069	675	422	2,166	460	210	14	684	2,850	1,548,322
DC-9-10	520	474	564	1,558	33	50	3	85	1,643	100,289
DC-9-15	NR	NR	NR	NR	NR	NR	NR	NR	NR	9,285
DC-9-30	619	534	496	1,649	82	102	5	189	1,838	808,628
DC-9-40	608	534	442	1,585	183	114	3	299	1,884	45,592
DC-9-50	659	582	563	1,804	108	65	5	178	1,982	188,154
F-28	795	450	655	1,899	349	56	30	434	2,333	61,244
FOKR-100	778	401	370	1,549	56	337	17	410	1,959	400,855
FOKR-70	514	615	298	1,427	612	177	27	815	2,243	7,387
MD-80	782	584	396	1,762	323	127	12	462	2,224	2,279,138
MD-87	351	363	68	783	305	0	15	320	1,103	8,010
MD-90	845	536	88	1,470	83	431	6	520	1,989	52,351
Two-engine wide body jet	1,348	1,041	705	3,094	548	302	13	863	3,957	1,080,550
A300-600	1,238	1,126	1,169	3,533	983	354	11	1,348	4,881	110,112
A300-X4	990	1,022	1,531	3,543	610	116	62	788	4,332	18,382
B-767-2/ER	1,201	941	712	2,854	170	400	18	588	3,443	368,093
B-767-3/ER	1,427	1,057	590	3,074	725	240	7	972	4,046	525,665
B-777	1,862	1,381	595	3,838	497	193	20	710	4,548	58,298
Three-engine narrow body jet	982	842	585	2,410	92	85	7	184	2,594	1,478,241
B-727-1	NR	NR	NR	NR	NR	NR	NR	NR	NR	895
B-727-2	982	842	585	2,409	92	85	7	184	2,594	1,474,680
B-727-QC	NR	NR	NR	NR	NR	NR	NR	NR	NR	2,666
Three-engine wide body jet	1,778	1,639	1,310	4,727	337	821	15	1,173	5,900	879,513
DC-10-1	1,521	1,478	1,616	4,615	170	381	14	565	5,179	195,771
DC-10-3	1,631	1,748	1,302	4,680	648	258	27	933	5,613	166,122
DC-10-4	1,667	1,730	1,661	5,057	37	89	3	129	5,186	81,057
L-1011	1,720	1,597	1,239	4,557	75	944	12	1,031	5,588	211,053
L-1011-5	2,439	1,715	958	5,112	0	3,822	2	3,824	8,936	80,966
MD-11	2,072	1,702	1,005	4,780	945	614	23	1,582	6,361	144,544

Table 4-11 (Continued)
Detail Supporting Table 4-1A
Large (Form 41) Carrier Operating and Fixed Costs Per Block Hour

Economic Values Class	Per Block Hour									
	(Column 1)	(Column 2)	(Column 3)	(Column 4)	(Column 5)	(Column 6)	(Column 7)	(Column 8)	(Column 9)	(Column 10)
Crew	Fuel & Oil	Maintenance	Total Variable Costs	Rentals	Depreciation	Insurance	Total Fixed Costs	Total Costs	Block Hours	
Four-engine narrow body jet	473	673	803	1,949	659	48	52	759	2,708	68,930
BAE-146-1	487	555	181	1,224	227	16	81	324	1,548	1,174
BAE-146-2	278	374	487	1,139	453	3	29	485	1,625	12,547
BAE-146-3	410	508	636	1,553	812	0	42	853	2,406	37,210
DC-8-62	695	1,208	1,377	3,281	526	145	89	760	4,041	16,446
DC-8-63	1,240	1,570	1,863	4,673	387	564	78	1,029	5,702	1,553
Four-engine wide body jet	2,349	2,551	1,604	6,504	971	453	26	1,450	7,955	448,155
B-747-1	2,213	2,580	1,877	6,670	399	568	21	988	7,658	216,962
B-747-2/3	2,224	2,700	1,973	6,896	1,021	700	17	1,739	8,635	55,707
B-747-4	2,556	2,469	1,150	6,176	1,663	232	35	1,930	8,106	175,486
Regional jet under 40 seats	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Regional jet with 40-59 seats	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Regional jet over 59 seats	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Turboprops under 20 seats	114	89	110	314	75	43	7	124	438	491,669
B-I900	103	93	87	284	72	52	7	131	415	373,433
JETST-31	121	79	172	371	72	1	6	80	451	79,253
METRO-III	208	72	203	483	109	36	13	158	641	38,983
Turboprops with 20 or more seats	181	114	250	545	215	46	8	268	813	1,081,703
ATR-42	184	111	303	598	303	24	5	332	930	238,969
ATR-72	207	119	230	557	260	60	4	324	881	154,978
BAE-ATP	NR	NR	NR	NR	NR	NR	NR	NR	NR	21,466
DHC8-100	253	121	374	748	254	35	25	314	1,062	66,395
DHC8-300	137	149	67	352	82	47	5	134	487	17,669
DO-328	240	111	218	569	239	5	33	277	846	29,983
EMB-120	152	114	235	501	106	77	8	191	692	345,838
JETST-41	139	100	86	324	203	2	9	214	538	58,612
L-188A	NR	NR	NR	NR	NR	NR	NR	NR	NR	3,743
SF-340	194	106	213	513	305	19	3	326	839	114,491
SHORT360	141	148	427	716	175	35	0	210	926	29,559
Piston	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
All Aircraft	879	695	530	2,104	321	181	11	513	2,618	15,150,956

Source: BTS Form 41 for year-end 1996.

NR = No data reported.

Col 1: Total flight deck and flight attendant costs divided by total block hours.

Col 2: Cost of total fuel and oil consumed divided by total block hours.

Col 3: Maintenance and maintenance overhead (burden) costs divided by total block hours.

Col 4: Columns 1+2+3.

Col 5: Total amortization (for capital leases) and rental charges (for operating leases) divided by total block hours.

Col 6: Total depreciation charges divided by block hours.

Col 7: Total insurance costs divided by total block hours.

Col 8: Columns 5+6+7.

Col 9: Columns 4+8.

Col 10: Block hours reported in Form 41.

Table 4-12
Detail Supporting Table 4-1B
Large (Form 41) Carriers Operating and Fixed Costs Per Airborne Hour

Economic Values Class	Per Airborne Hour									
	(Column 1)	(Column 2)	(Column 3)	(Column 4)	(Column 5)	(Column 6)	(Column 7)	(Column 8)	(Column 9)	(Column 10)
Crew	Fuel & Oil	Maintenance	Total Variable Costs	Rentals	Depreciation	Insurance	Total Fixed Costs	Total Costs	Airborne Hours	
Two-engine narrow body jet	928	665	515	2,108	384	159	13	557	2,665	8,015,424
A320-1/2	994	613	392	1,998	621	94	15	730	2,728	383,236
B-737-1/2	855	650	665	2,169	131	135	6	272	2,441	775,127
B-737-2C	731	669	954	2,355	140	152	9	301	2,656	77,435
B-737-3	817	598	511	1,926	493	110	13	616	2,542	1,570,316
B-737-4	999	629	309	1,936	694	88	26	809	2,745	261,865
B-737-5	663	566	464	1,693	384	139	13	535	2,228	372,952
B-757	1,232	779	487	2,498	531	243	16	789	3,287	1,341,922
DC-9-10	668	609	726	2,003	42	64	3	110	2,113	77,990
DC-9-15	NR	NR	NR	NR	NR	NR	NR	NR	NR	7,662
DC-9-30	772	673	625	2,071	103	129	6	239	2,310	642,432
DC-9-40	778	683	566	2,028	234	145	3	383	2,411	35,637
DC-9-50	858	770	745	2,372	143	86	6	235	2,607	142,913
F-28	1,011	572	833	2,416	443	71	38	552	2,968	48,152
FOKR-100	953	505	466	1,923	70	424	21	515	2,438	320,360
FOKR-70	571	683	331	1,584	679	196	30	905	2,489	6,655
MD-80	934	700	475	2,110	388	153	14	555	2,665	1,900,678
MD-87	418	432	81	931	362	0	18	381	1,312	6,738
MD-90	1,021	648	106	1,775	100	520	7	628	2,403	43,354
Two-engine wide body jet	1,489	1,152	780	3,420	606	334	14	954	4,374	977,047
A300-600	1,467	1,334	1,385	4,186	1,164	419	13	1,597	5,783	92,943
A300-X4	1,073	1,211	1,816	4,100	723	138	74	935	5,035	15,562
B-767-2/ER	1,324	1,037	785	3,146	188	441	20	648	3,794	333,977
B-767-3/ER	1,559	1,155	645	3,359	793	262	7	1,062	4,421	480,968
B-777	2,026	1,502	647	4,175	541	210	21	772	4,947	53,597
Three-engine narrow body jet	1,188	1,025	712	2,925	112	104	9	224	3,149	1,216,170
B-727-1	NR	NR	NR	NR	NR	NR	NR	NR	NR	772
B-727-2	1,188	1,025	712	2,925	112	104	9	224	3,149	1,213,062
B-727-QC	NR	NR	NR	NR	NR	NR	NR	NR	NR	2,336
Three-engine wide body jet	1,981	1,827	1,459	5,268	375	915	17	1,307	6,575	789,247
DC-10-1	1,721	1,672	1,829	5,222	192	431	15	639	5,861	173,020
DC-10-3	1,765	1,891	1,409	5,066	701	279	30	1,009	6,075	153,489
DC-10-4	1,884	1,954	1,877	5,715	42	100	4	146	5,861	71,728
L-1011	2,007	1,863	1,445	5,315	87	1,101	14	1,202	6,517	180,958
L-1011-5	2,666	1,875	1,048	5,589	0	4,179	2	4,181	9,770	74,061
MD-11	2,202	1,809	1,069	5,080	1,004	652	25	1,681	6,761	135,991

Table 4-12 (Continued)
Detail Supporting Table 4-1B
Large (Form 41) Carriers Operating and Fixed Costs Per Airborne Hour

Economic Values Class	Per Airborne Hour									
	(Column 1)	(Column 2)	(Column 3)	(Column 4)	(Column 5)	(Column 6)	(Column 7)	(Column 8)	(Column 9)	(Column 10)
Crew	Fuel & Oil	Maintenance	Total Variable Costs	Rentals	Depreciation	Insurance	Total Fixed Costs	Total Costs	Airborne Hours	
Four-engine narrow body jet	582	829	990	2,401	813	59	64	935	3,336	55,950
BAE-146-1	583	665	217	1,464	272	20	97	388	1,852	981
BAE-146-2	382	514	670	1,566	622	5	40	667	2,233	9,131
BAE-146-3	514	637	798	1,949	1,019	0	52	1,071	3,020	29,649
DC-8-62	769	1,342	1,529	3,640	584	161	99	844	4,484	14,799
DC-8-63	1,386	1,754	2,082	5,221	433	630	87	1,150	6,371	1,390
Four-engine wide body jet	2,488	2,703	1,699	6,890	1,029	479	28	1,536	8,426	423,086
B-747-1	2,360	2,750	2,001	7,110	425	605	23	1,053	8,163	203,531
B-747-2/3	2,372	2,880	2,104	7,356	1,089	747	18	1,855	9,211	52,226
B-747-4	2,680	2,590	1,207	6,477	1,744	243	37	2,025	8,502	167,329
Regional jet under 40 seats	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Regional jet with 40-59 seats	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Regional jet over 59 seats	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Turboprops under 20 seats	149	116	143	408	97	55	9	162	570	378,221
B-I900	135	121	114	370	93	68	9	170	540	287,113
JETST-31	159	104	226	488	95	1	8	104	592	60,323
METRO-III	263	92	257	612	138	46	16	199	811	30,785
Turboprops with 20 or more seats	228	145	318	692	273	58	10	341	1,033	850,086
ATR-42	234	141	385	760	386	30	6	422	1,182	187,998
ATR-72	272	157	302	731	341	79	6	426	1,157	118,076
BAE-ATP	NR	NR	NR	NR	NR	NR	NR	NR	NR	16,416
DHC8-100	320	153	474	947	321	44	32	398	1,345	52,427
DHC8-300	161	176	79	416	97	56	6	159	575	14,974
DO-328	304	140	276	720	303	7	42	351	1,071	23,682
EMB-120	188	141	292	620	131	96	10	236	856	279,330
JETST-41	178	128	110	415	261	2	12	274	689	45,726
L-188A	NR	NR	NR	NR	NR	NR	NR	NR	NR	3,373
SF-340	257	140	283	680	404	25	4	433	1,113	86,351
SHORT360	191	201	581	973	238	48	0	286	1,259	21,733
Piston	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
All Aircraft	1,044	829	632	2,506	383	216	14	612	3,118	12,705,231

Source: BTS Form 41 for year-end 1996.

Col 1: Total flight deck and flight attendant costs divided by total airborne hours.

Col 2: Cost of total fuel and oil consumed divided by total airborne hours.

Col 3: Maintenance and maintenance overhead (burden) costs divided by total airborne hours.

Col 4: Columns 1+2+3.

Col 5: Total amortization (for capital leases) and rental charges (for operating leases) divided by total airborne hours.

Col 6: Total depreciation charges divided by airborne hours.

Col 7: Total insurance costs divided by total airborne hours.

Col 8: Columns 5+6+7.

Col 9: Columns 4+8.

Col 10: Airborne hours reported in Form 41.

Table 4-13
Detail Supporting Table 4-2A
Large (Form 41) Air Freight Carrier Operating and Fixed Costs Per Block Hour

Economic Values Class	Per Block Hour									
	(Column 1)	(Column 2)	(Column 3)	(Column 4)	(Column 5)	(Column 6)	(Column 7)	(Column 8)	(Column 9)	(Column 10)
	Crew	Fuel & Oil	Maintenance	Total Variable Costs	Rentals	Depreciation	Insurance	Total Fixed Costs	Total Costs	Block Hours
Two-engine narrow body jet	1,012	829	799	2,640	647	602	45	1,294	3,934	117,509
B-757	1,069	841	821	2,731	668	639	46	1,352	4,084	99,783
DC-9-15	357	630	548	1,536	410	188	36	634	2,170	9,865
DC-9-30	353	701	541	1,594	405	185	35	625	2,220	6,431
FALCON	NR	NR	NR	NR	NR	NR	NR	NR	NR	350
HS-125	NR	NR	NR	NR	NR	NR	NR	NR	NR	1,080
Two-engine wide body jet	926	991	1,505	3,422	1,953	392	53	2,398	5,820	84,089
A300-600	1,178	1,039	1,267	3,484	3,181	157	72	3,410	6,894	32,634
A310-2CF	1,118	998	2,485	4,602	1,643	441	44	2,128	6,730	32,074
B-767-3/ER	184	897	286	1,367	398	708	35	1,141	2,508	19,381
Three-engine narrow body jet	1,229	789	1,535	3,553	232	870	28	1,129	4,683	298,091
B-727-1	1,431	811	2,099	4,341	250	1,029	23	1,302	5,643	107,345
B-727-2	1,228	912	1,308	3,447	254	893	31	1,178	4,626	165,462
B-727-QC	426	8	542	976	31	98	29	158	1,133	25,284
Three-engine wide body jet	1,292	1,636	2,313	5,241	1,607	273	45	1,925	7,166	167,381
DC-10-1	1,365	1,412	3,494	6,271	526	754	31	1,312	7,583	24,116
DC-10-3	1,453	1,677	2,606	5,736	1,511	256	37	1,805	7,541	61,449
DC-10-F	NR	NR	NR	NR	NR	NR	NR	NR	NR	7,248
L-1011	746	1,739	2,042	4,528	331	430	134	895	5,423	7,550
MD-11	1,182	1,669	1,655	4,506	2,224	96	48	2,368	6,875	67,018
Four-engine narrow body jet	692	764	1,174	2,631	213	303	48	564	3,195	274,755
B-707-3C	NR	NR	NR	NR	NR	NR	NR	NR	NR	9,315
DC-8-50	NR	NR	NR	NR	NR	NR	NR	NR	NR	6
DC-8-50F	757	1,589	1,821	4,167	143	452	104	699	4,867	30,686
DC-8-61	762	1,509	1,829	4,099	136	472	110	718	4,817	9,086
DC-8-62	328	380	1,000	1,708	429	54	68	551	2,259	16,863
DC-8-63	486	564	963	2,013	599	4	66	670	2,684	8,325
DC-8-63F	476	617	1,072	2,165	247	170	64	481	2,646	31,761
DC-8-71	784	636	1,142	2,562	59	344	27	429	2,991	73,343
DC-8-73	880	1,125	1,283	3,289	157	462	32	651	3,940	64,565
DC-8-73F	513	202	851	1,567	490	122	63	675	2,242	30,805
Four-engine wide body jet	1,371	2,296	2,736	6,403	798	473	62	1,333	7,737	144,927
B-747-1	887	2,382	2,214	5,483	423	369	73	865	6,348	84,435
B-747-2/3	1,833	1,468	2,815	6,116	1,535	461	88	2,084	8,200	24,322
B-747-F	2,191	2,653	3,901	8,745	1,180	723	20	1,922	10,667	36,170
Regional jet under 40 seats	NR	NR	NR	NR	NR	NR	NR	NR	NR	35
LEAR-24	NR	NR	NR	NR	NR	NR	NR	NR	NR	1
LEAR-25	NR	NR	NR	NR	NR	NR	NR	NR	NR	22
LEAR-35	NR	NR	NR	NR	NR	NR	NR	NR	NR	12
Regional jet with 40-59 seats	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Regional jet over 59 seats	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR

Table 4-13 (Continued)
Detail Supporting Table 4-2A
Large (Form 41) Air Freight Carrier Operating and Fixed Costs Per Block Hour

Economic Values Class	Per Block Hour									
	(Column 1)	(Column 2)	(Column 3)	(Column 4)	(Column 5)	(Column 6)	(Column 7)	(Column 8)	(Column 9)	(Column 10)
Crew	Fuel & Oil	Maintenance	Total Variable Costs	Rentals	Depreciation	Insurance	Total Fixed Costs	Total Costs	Block Hours	
Turboprops under 20 seats	0	35	0	35	317	0	0	317	352	147,200
BECH-99	NR	NR	NR	NR	NR	NR	NR	NR	NR	16
BECH-C99	NR	NR	NR	NR	NR	NR	NR	NR	NR	1,339
B-I900	NR	NR	NR	NR	NR	NR	NR	NR	NR	2,076
C-208	0	35	0	35	317	0	0	317	352	127,347
METRO-II	NR	NR	NR	NR	NR	NR	NR	NR	NR	272
METRO-III	NR	NR	NR	NR	NR	NR	NR	NR	NR	15,897
MU-2/B	NR	NR	NR	NR	NR	NR	NR	NR	NR	253
Turboprops with 20 or more seats	607	516	902	2,025	0	365	170	534	2,560	41,926
CV-580	NR	NR	NR	NR	NR	NR	NR	NR	NR	2,459
CV-600	NR	NR	NR	NR	NR	NR	NR	NR	NR	8,034
CV-640	NR	NR	NR	NR	NR	NR	NR	NR	NR	2,356
L-188A	NR	NR	NR	NR	NR	NR	NR	NR	NR	7,995
L-382E	607	516	902	2,025	0	365	170	534	2,560	17,857
SD3-30	NR	NR	NR	NR	NR	NR	NR	NR	NR	1,004
SHORT360	NR	NR	NR	NR	NR	NR	NR	NR	NR	2,221
Piston	NR	NR	NR	NR	NR	NR	NR	NR	NR	75,007
B-55	NR	NR	NR	NR	NR	NR	NR	NR	NR	1,168
BECH-18	NR	NR	NR	NR	NR	NR	NR	NR	NR	456
C-185	NR	NR	NR	NR	NR	NR	NR	NR	NR	51,554
C-310	NR	NR	NR	NR	NR	NR	NR	NR	NR	418
C-401	NR	NR	NR	NR	NR	NR	NR	NR	NR	138
C-402	NR	NR	NR	NR	NR	NR	NR	NR	NR	754
C-404	NR	NR	NR	NR	NR	NR	NR	NR	NR	8
CES-206/7	NR	NR	NR	NR	NR	NR	NR	NR	NR	730
CV-240	NR	NR	NR	NR	NR	NR	NR	NR	NR	13
D-35	NR	NR	NR	NR	NR	NR	NR	NR	NR	34
DC-6	NR	NR	NR	NR	NR	NR	NR	NR	NR	13,788
DO-28	NR	NR	NR	NR	NR	NR	NR	NR	NR	2,262
PA-30'S	NR	NR	NR	NR	NR	NR	NR	NR	NR	3,263
PA-32	NR	NR	NR	NR	NR	NR	NR	NR	NR	421
All Aircraft	1,057	1,137	1,637	3,831	703	497	46	1,247	5,077	1,350,920

Source: BTS Form 41 for year-end 1996.

NR = No data reported.

Col 1: Total flight deck and flight attendant costs divided by total block hours.

Col 2: Cost of total fuel and oil consumed divided by total block hours.

Col 3: Maintenance and maintenance overhead (burden) costs divided by total block hours.

Col 4: Columns 1+2+3.

Col 5: Total amortization (for capital leases) and rental charges (for operating leases) divided by total block hours.

Col 6: Total depreciation charges divided by block hours.

Col 7: Total insurance costs divided by total block hours.

Col 8: Columns 5+6+7.

Col 9: Columns 4+8.

Col 10: Block hours reported in Form 41.

Table 4-14
Detail Supporting Table 4-2B
Large (Form 41) Air Freight Carrier Operating and Fixed Costs Per Airborne Hour

Economic Values Class	Per Airborne Hour									
	(Column 1)	(Column 2)	(Column 3)	(Column 4)	(Column 5)	(Column 6)	(Column 7)	(Column 8)	(Column 9)	(Column 10)
Crew	Fuel & Oil	Maintenance	Total Variable Costs	Rentals	Depreciation	Insurance	Total Fixed Costs	Total Costs	Airborne Hours	
Two-engine narrow body jet	1,179	966	931	3,076	754	702	53	1,508	4,584	100,981
B-757	1,242	977	954	3,173	775	742	53	1,571	4,743	85,989
DC-9-15	427	754	656	1,837	491	225	42	758	2,595	8,454
DC-9-30	428	850	656	1,934	491	225	42	759	2,692	5,302
FALCON	NR	NR	NR	NR	NR	NR	NR	NR	NR	301
HS-125	NR	NR	NR	NR	NR	NR	NR	NR	NR	935
Two-engine wide body jet	1,071	1,145	1,740	3,955	2,257	453	61	2,771	6,727	72,758
A300-600	1,365	1,203	1,467	4,035	3,685	181	84	3,950	7,985	28,174
A310-2CF	1,328	1,186	2,952	5,465	1,952	523	52	2,527	7,993	27,005
B-767-3/ER	203	989	315	1,507	439	781	38	1,258	2,765	17,579
Three-engine narrow body jet	1,483	952	1,852	4,288	279	1,050	34	1,363	5,651	249,253
B-727-1	1,737	985	2,548	5,270	303	1,249	28	1,581	6,850	89,028
B-727-2	1,481	1,100	1,578	4,158	307	1,078	37	1,421	5,580	138,764
B-727-QC	503	9	640	1,152	36	116	34	186	1,338	21,461
Three-engine wide body jet	1,409	1,785	2,523	5,718	1,753	297	49	2,100	7,818	153,648
DC-10-1	1,596	1,650	4,083	7,329	615	881	37	1,533	8,862	20,635
DC-10-3	1,614	1,864	2,896	6,374	1,679	285	41	2,006	8,380	55,319
DC-10-F	NR	NR	NR	NR	NR	NR	NR	NR	NR	6,864
L-1011	624	1,455	1,708	3,787	277	360	112	749	4,536	9,018
MD-11	1,282	1,809	1,795	4,886	2,412	104	52	2,568	7,454	61,812
Four-engine narrow body jet	797	879	1,352	3,028	245	348	56	649	3,677	238,710
B-707-3C	NR	NR	NR	NR	NR	NR	NR	NR	NR	7,961
DC-8-50	NR	NR	NR	NR	NR	NR	NR	NR	NR	5
DC-8-50F	913	1,917	2,196	5,026	172	546	126	843	5,870	26,256
DC-8-61	876	1,735	2,104	4,716	156	543	127	826	5,542	7,896
DC-8-62	389	450	1,186	2,025	509	64	81	653	2,678	14,224
DC-8-63	564	655	1,118	2,337	696	5	77	778	3,115	7,171
DC-8-63F	552	717	1,244	2,514	287	198	74	559	3,073	27,355
DC-8-71	918	745	1,338	3,001	69	402	31	502	3,503	62,617
DC-8-73	982	1,256	1,432	3,670	175	515	36	727	4,397	57,848
DC-8-73F	578	227	958	1,763	552	137	70	760	2,522	27,377
Four-engine wide body jet	1,502	2,515	2,996	7,013	874	518	68	1,460	8,474	132,322
B-747-1	972	2,609	2,424	6,004	463	404	80	947	6,951	77,109
B-747-2/3	1,995	1,599	3,064	6,658	1,671	502	95	2,269	8,927	22,340
B-747-F	2,411	2,919	4,292	9,622	1,298	796	22	2,115	11,737	32,873
Regional jet under 40 seats	NR	NR	NR	NR	NR	NR	NR	NR	NR	50
LEAR-24	NR	NR	NR	NR	NR	NR	NR	NR	NR	5
LEAR-25	NR	NR	NR	NR	NR	NR	NR	NR	NR	27
LEAR-35	NR	NR	NR	NR	NR	NR	NR	NR	NR	18
Regional jet with 40-59 seats	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Regional jet over 59 seats	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR

Table 4-14 (Continued)
Detail Supporting Table 4-2B
Large (Form 41) Air Freight Carrier Operating and Fixed Costs Per Airborne Hour

Per Airborne Hour										
Economic Values Class	(Column 1)	(Column 2)	(Column 3)	(Column 4)	(Column 5)	(Column 6)	(Column 7)	(Column 8)	(Column 9)	(Column 10)
	Crew	Fuel & Oil	Maintenance	Total Variable Costs	Rentals	Depreciation	Insurance	Total Fixed Costs	Total Costs	Airborne Hours
Turboprops under 20 seats	0	41	0	41	375	0	0	375	416	129,217
BECH-99	NR	NR	NR	NR	NR	NR	NR	NR	NR	14
BECH-C99	NR	NR	NR	NR	NR	NR	NR	NR	NR	1,284
B-I900	NR	NR	NR	NR	NR	NR	NR	NR	NR	1,807
C-208	0	41	0	41	375	0	0	375	416	111,567
METRO-II	NR	NR	NR	NR	NR	NR	NR	NR	NR	232
METRO-III	NR	NR	NR	NR	NR	NR	NR	NR	NR	14,109
MU-2/B	NR	NR	NR	NR	NR	NR	NR	NR	NR	204
Turboprops with 20 or more seats	672	571	998	2,241	0	404	188	591	2,832	36,175
CV-580	NR	NR	NR	NR	NR	NR	NR	NR	NR	2,104
CV-600	NR	NR	NR	NR	NR	NR	NR	NR	NR	6,746
CV-640	NR	NR	NR	NR	NR	NR	NR	NR	NR	2,000
L-188A	NR	NR	NR	NR	NR	NR	NR	NR	NR	6,491
L-382E	672	571	998	2,241	0	404	188	591	2,832	16,141
SD3-30	NR	NR	NR	NR	NR	NR	NR	NR	NR	787
SHORT360	NR	NR	NR	NR	NR	NR	NR	NR	NR	1,906
Piston	NR	NR	NR	NR	NR	NR	NR	NR	NR	64,368
B-55	NR	NR	NR	NR	NR	NR	NR	NR	NR	1,058
BECH-18	NR	NR	NR	NR	NR	NR	NR	NR	NR	389
C-185	NR	NR	NR	NR	NR	NR	NR	NR	NR	44,794
C-310	NR	NR	NR	NR	NR	NR	NR	NR	NR	362
C-401	NR	NR	NR	NR	NR	NR	NR	NR	NR	116
C-402	NR	NR	NR	NR	NR	NR	NR	NR	NR	653
C-404	NR	NR	NR	NR	NR	NR	NR	NR	NR	6
CES-206/7	NR	NR	NR	NR	NR	NR	NR	NR	NR	653
CV-240	NR	NR	NR	NR	NR	NR	NR	NR	NR	12
D-35	NR	NR	NR	NR	NR	NR	NR	NR	NR	31
DC-6	NR	NR	NR	NR	NR	NR	NR	NR	NR	11,291
DO-28	NR	NR	NR	NR	NR	NR	NR	NR	NR	1,811
PA-30'S	NR	NR	NR	NR	NR	NR	NR	NR	NR	2,825
PA-32	NR	NR	NR	NR	NR	NR	NR	NR	NR	367
All Aircraft	1,213	1,304	1,877	4,395	806	571	53	1,430	5,825	1,177,482

Source: BTS Form 41 for year-end 1996.

NR = No data reported.

Col 1: Total flight deck and flight attendant costs divided by total airborne hours.

Col 2: Cost of total fuel and oil consumed divided by total airborne hours.

Col 3: Maintenance and maintenance overhead (burden) costs divided by total airborne hours.

Col 4: Columns 1+2+3.

Col 5: Total amortization (for capital leases) and rental charges (for operating leases) divided by total airborne hours.

Col 6: Total depreciation charges divided by airborne hours.

Col 7: Total insurance costs divided by total airborne hours.

Col 8: Columns 5+6+7.

Col 9: Columns 4+8.

Col 10: Airborne hours reported in Form 41.

Table 4-15
Detail Supporting Table 4-3A
Alaskan Form 298-C Carrier Operating and Fixed Costs Per Block Hour

Economic Values Class	Per Block Hour								
	(Column 1)	(Column 2)	(Column 3)	(Column 4)	(Column 5)	(Column 6)	(Column 7)	(Column 8)	(Column 9)
Crew	Fuel & Oil	Maintenance	Total Variable Costs	Depreciation and Rentals	Other	Total Fixed Costs	Total Costs	Block Hours	
Two-engine narrow body jet	68	50	226	344	259	250	509	853	111
OTHER 2-ENGINE TURBO-FAN JET	68	50	226	344	259	250	509	853	111
Two-engine wide body jet	NR	NR	NR	NR	NR	NR	NR	NR	NR
Three-engine narrow body jet	57	22	55	135	23	25	49	183	878
BOEING 727-200/231A	NR	NR	NR	NR	NR	NR	NR	NR	NR
OTHER 3-ENGINE TURBO-FAN JET	57	22	52	131	23	23	47	178	878
Three-engine wide body jet	NR	NR	NR	NR	NR	NR	NR	NR	NR
Four-engine narrow body jet	231	181	719	1,132	129	326	455	1,587	580
OTHER 4-ENGINE TURBO-FAN JET	231	181	719	1,132	129	326	455	1,587	580
Four-engine wide body jet	NR	NR	NR	NR	NR	NR	NR	NR	NR
Regional jet under 40 seats	416	282	442	1,140	291	53	344	1,484	1,557
GATES LEARJET LEAR-35	416	282	442	1,140	291	53	344	1,484	1,557
Regional jet with 40-59 seats	NR	NR	NR	NR	NR	NR	NR	NR	NR
Regional jet over 59 seats	NR	NR	NR	NR	NR	NR	NR	NR	NR
Turboprops under 20 seats	98	108	165	371	94	31	125	496	70,463
BEECH 1900 A/B/C	71	147	127	346	32	37	69	415	3,493
BEECH 200 SUPER KINGAIR	93	130	155	378	69	20	89	467	4,191
BEECH 99 AIRLINER	83	113	139	336	53	23	77	412	2,960
BEECH C99	126	183	248	557	155	22	177	734	3,157
BEECH KING AIR C-90	288	84	255	627	193	69	262	889	631
CESSNA 208 CARAVAN	69	84	111	264	112	28	140	405	12,911
CESSNA C-441	312	90	282	684	80	64	144	828	880
FAIRCHILD-HILLER FH-227	74	183	173	431	301	66	367	798	178
FLOAT/AMPHIB TURBINE	74	64	132	269	62	77	140	409	1,110
GRUMMAN G-21G (TURBO-GOOSE)	223	91	384	699	342	127	469	1,167	263
LAND-TURBINE	66	65	109	240	85	16	101	341	515
PIPER T-1040	86	101	121	308	30	7	36	344	7,675
SHORTS HARLAND SC-7 SKYVAN	63	139	175	377	132	35	168	545	2,307
SWEARINGEN METRO II	84	153	226	463	116	34	150	613	614
SWEARINGEN METRO III	116	116	185	417	146	36	183	599	14,539
SWEARINGEN METRO MERLIN	79	119	101	299	162	49	210	510	139
VOLPAR TURBO 18	80	129	99	307	180	30	209	516	1,753
DEHAVILLAND TWIN OTTER DHC-6	106	86	214	406	46	37	83	489	13,147
Turboprops with 20 or more seats	215	268	461	944	91	66	157	1,101	11,991
CASA 235	74	184	199	458	101	32	134	591	371
CASA/NURTANIO C212 AVIOCAR	77	154	168	399	171	50	221	620	658
CONVAIR CV-580	225	363	566	1,154	28	77	105	1,259	5,918
DEHAVILLAND DHC4 CARIBOU	41	168	183	393	168	23	192	585	334
DEHAVILLAND DHC8-100 DASH-8	244	178	411	834	153	60	213	1,047	4,710

Table 4-15 (Continued)
Detail Supporting Table 4-3A
Alaskan Form 298-C Carrier Operating and Fixed Costs Per Block Hour

Economic Values Class	Per Block Hour								
	(Column 1)	(Column 2)	(Column 3)	(Column 4)	(Column 5)	(Column 6)	(Column 7)	(Column 8)	(Column 9)
Crew	Fuel & Oil	Maintenance	Total Variable Costs	Depreciation and Rentals	Other	Total Fixed Costs	Total Costs	Block Hours	
Piston	54	51	69	174	22	12	34	208	294,247
BEECH 18 C-185	100	130	144	375	54	22	76	451	2,910
BEECH BARON (55 SERIES)	89	85	100	273	35	17	53	326	503
CESSNA 172 SKYHAWK	49	21	52	122	15	7	22	143	5,412
CESSNA 180	53	42	37	132	30	7	37	169	1,271
CESSNA 185A/B/C SKYWAGON	63	29	59	152	27	13	40	192	6,606
CESSNA C206/207/209/210 STATIONAIR	53	38	60	151	20	13	33	184	93,260
CESSNA C-401	41	30	33	104	68	25	93	197	931
CESSNA C-402/402A	59	93	104	256	56	47	103	359	11,279
DEHAVILLAND DHC2 BEAVER	63	47	53	163	25	10	36	199	27,128
DEHAVILLAND DHC3 OTTER	64	65	132	260	39	37	76	336	6,928
GRUMMAN G-21A (GOOSE)	155	116	238	510	44	29	73	583	1,245
GRUMMAN G-44/44A (WIDGEON)	46	24	98	168	243	5	248	416	908
HELIO H-250	19	25	35	78	11	8	19	97	277
LAND-PISTON-LT 450 HP	43	35	51	130	18	5	22	152	19,734
MCDONNELL DOUGLAS DC-3/A/C,C-47/B	114	223	178	515	87	21	108	623	609
PILATUS BRITTEN-NORMAN BN2/A ISLANDER	50	56	81	187	11	12	23	211	3,159
PIPER PA-18 (SUPER-CUB)	23	17	28	68	17	9	26	94	1,481
PIPER PA-22 (TRI-PACER)	NR	NR	NR	NR	NR	NR	NR	NR	0
PIPER PA-24 (COMANCHE)	29	24	46	99	183	33	217	316	15
PIPER PA-28 (CHEROKEE)	21	21	24	66	6	5	12	78	5,598
PIPER PA-31 (NAVAJO)	55	79	100	234	19	7	26	261	54,449
PIPER PA-32 (CHEROKEE 6)	46	35	45	125	13	5	18	143	41,340
PIPER PA-34/39 (TWIN COMANCHE)	49	61	75	186	22	7	29	214	5,321
PIPER T-1020	88	116	89	293	34	9	43	336	3,883
All Aircraft	69	69	102	240	39	18	57	297	379,827

Source: BTS Form 298-C for year-end 1996.

NR = No data reported.

Col 1: Total flight deck and flight attendant costs divided by total block hours.

Col 2: Cost of total fuel and oil consumed divided by total block hours.

Col 3: Maintenance and maintenance overhead (burden) costs divided by total block hours.

Col 4: Columns 1+2+3.

Col 5: Total amortization (for capital leases), rental charges (for operating leases) and depreciation divided by total block hours.

Col 6: Total other (primarily insurance) costs divided by total block hours.

Col 7: Columns 5+6.

Col 8: Columns 4+7.

Col 9: Block hours reported in 298-C.

Table 4-16
Detail Supporting Table 4-3B
Alaskan Form 298-C Carrier Operating and Fixed Costs Per Airborne Hour

Economic Values Class	Per Airborne Hour								(Column 9) Airborne Hours
	(Column 1) Crew	(Column 2) Fuel & Oil	(Column 3) Maintenance	(Column 4) Total Variable Costs	(Column 5) Rentals	(Column 6) Other	(Column 7) Total Fixed Costs	(Column 8) Total Costs	
Two-engine narrow body jet	85	63	285	433	326	315	641	1,074	88
OTHER 2-ENGINE TURBO-FAN JET	85	63	285	433	326	315	641	1,074	88
Two-engine wide body jet	NR	NR	NR	NR	NR	NR	NR	NR	NR
Three-engine narrow body jet	72	28	70	169	30	32	61	231	697
BOEING 727-200/231A	NR	NR	NR	NR	NR	NR	NR	NR	NR
OTHER 3-ENGINE TURBO-FAN JET	72	28	66	165	30	30	59	224	697
Three-engine wide body jet	NR	NR	NR	NR	NR	NR	NR	NR	NR
Four-engine narrow body jet	292	228	906	1,425	162	411	573	1,999	461
OTHER 4-ENGINE TURBO-FAN JET	292	228	906	1,425	162	411	573	1,999	461
Four-engine wide body jet	NR	NR	NR	NR	NR	NR	NR	NR	NR
Regional jet under 40 seats	524	355	557	1,435	366	67	434	1,869	1,236
GATESLEARJET LEAR-35	524	355	557	1,435	366	67	434	1,869	1,236
Regional jet with 40-59 seats	NR	NR	NR	NR	NR	NR	NR	NR	NR
Regional jet over 59 seats	NR	NR	NR	NR	NR	NR	NR	NR	NR
Turboprops under 20 seats	124	136	208	468	118	39	157	625	55,948
BEECH 1900 A/B/C	90	186	160	436	40	47	87	523	2,773
BEECH 200 SUPER KINGAIR	118	164	195	476	87	25	112	588	3,328
BEECH 99 AIRLINER	105	142	175	423	67	30	96	519	2,350
BEECH C99	159	231	312	701	195	28	223	924	2,507
BEECH KING AIR C-90	363	105	322	790	243	87	330	1,120	501
CESSNA 208 CARAVAN	87	105	140	333	142	35	177	510	10,251
CESSNA C-441	393	114	355	861	101	81	182	1,043	699
FAIRCHILD-HILLER FH-227	94	231	218	543	379	84	463	1,005	141
FLOAT/AMPHIB TURBINE	93	80	166	339	78	97	176	515	881
GRUMMAN G-21G (TURBO-GOOSE)	281	115	484	880	430	160	590	1,470	209
LAND-TURBINE	83	82	137	302	107	21	127	430	409
PIPER T-1040	108	127	152	387	38	8	46	433	6,094
SHORTS HARLAND SC-7 SKYVAN	80	175	221	475	167	45	211	687	1,832
SWEARINGEN METRO II	106	193	285	583	146	43	189	772	488
SWEARINGEN METRO III	146	146	233	525	184	46	230	755	11,544
SWEARINGEN METRO MERLIN	100	150	127	377	204	61	265	642	110
VOLPAR TURBO 18	101	162	124	387	226	38	264	650	1,392
DEHAVILLAND TWIN OTTER DHC-6	133	108	270	511	58	46	105	616	10,439
Turboprops with 20 or more seats	270	338	581	1,189	115	83	198	1,387	9,521
CASA 235	94	232	251	577	127	41	168	745	295
CASA/NURTANIO C212 AVIOCAR	97	194	211	503	215	63	279	781	522
CONVAIR CV-580	283	458	713	1,454	36	96	132	1,586	4,699
DEHAVILLAND DHC4 CARIBOU	52	212	231	495	212	30	242	737	265
DEHAVILLAND DHC8-100 DASH-8	308	224	518	1,050	193	76	269	1,318	3,740

Table 4-16 (Continued)
Detail Supporting Table 4-3B
Alaskan Form 298-C Carrier Operating and Fixed Costs Per Airborne Hour

Economic Values Class	Per Airborne Hour								Airborne Hours
	(Column 1) Crew	(Column 2) Fuel & Oil	(Column 3) Maintenance	(Column 4) Total Variable Costs	(Column 5) Rentals	(Column 6) Other	(Column 7) Total Fixed Costs	(Column 8) Total Costs	
Piston	68	64	87	219	28	15	43	262	233,632
BEECH 18 C-185	126	164	182	472	68	27	96	568	2,311
BEECH BARON (55 SERIES)	112	107	126	344	44	22	66	410	399
CESSNA 172 SKYHAWK	61	26	65	153	18	9	27	180	4,297
CESSNA 180	67	53	47	166	38	8	46	213	1,009
CESSNA 185A/B/C SKYWAGON	80	37	75	191	34	17	51	242	5,245
CESSNA C206/207/209/210 STATIONAIR	67	47	75	190	25	16	41	231	74,048
CESSNA C-401	52	38	41	131	86	32	117	248	739
CESSNA C-402/402A	75	117	131	323	71	59	130	452	8,956
DEHAVILLAND DHC2 BEAVER	79	59	67	205	32	13	45	250	21,540
DEHAVILLAND DHC3 OTTER	80	82	166	328	49	47	96	424	5,501
GRUMMAN G-21A (GOOSE)	196	146	300	642	55	37	92	734	989
GRUMMAN G-44/44A (WIDGEON)	58	30	123	212	306	7	312	524	721
HELIO H-250	23	32	44	99	13	10	24	122	220
LAND-PISTON-LT 450 HP	55	45	64	164	22	6	28	192	15,669
MCDONNELL DOUGLAS DC-3/A/C,C-47/B	143	280	225	648	110	26	136	785	484
PILATUS BRITTEN-NORMAN BN2/A ISLANDER	63	71	102	236	14	15	29	265	2,508
PIPER PA-18 (SUPER-CUB)	29	22	35	86	22	11	33	119	1,176
PIPER PA-22 (TRI-PACER)	NR	NR	NR	NR	NR	NR	NR	NR	0
PIPER PA-24 (COMANCHE)	37	30	58	125	231	42	273	398	12
PIPER PA-28 (CHEROKEE)	27	26	30	83	8	7	15	98	4,445
PIPER PA-31 (NAVajo)	70	99	127	295	24	9	33	328	43,233
PIPER PA-32 (CHEROKEE 6)	57	44	57	157	16	6	22	180	32,824
PIPER PA-34/39 (TWIN COMANCHE)	62	77	94	234	28	9	36	270	4,225
PIPER T-1020	111	146	112	369	42	12	54	423	3,083
All Aircraft	87	87	128	302	49	22	72	374	301,583

Source: BTS Form 41 for year-end 1996.

NR = No data reported.

Col 1: Total flight deck and flight attendant costs divided by total airborne hours.

Col 2: Cost of total fuel and oil consumed divided by total airborne hours.

Col 3: Maintenance and maintenance overhead (burden) costs divided by total airborne hours.

Col 4: Columns 1+2+3.

Col 5: Total amortization (for capital leases), rental charges (for operating leases) and depreciation divided by total airborne hours.

Col 6: Total other (primarily insurance) costs divided by total airborne hours.

Col 7: Columns 5+6.

Col 8: Columns 4+7.

Col 9: Airborne hours estimated as block hours reported in Form 298-C multiplied by the ratio of (airborne hrs/block hrs) reported for commuter operations in Form 41.

Table 4-17
Detail Supporting Table 4-4A
Non-Alaskan Form 298-C Carrier Operating and Fixed Costs Per Block Hour

Economic Values Class	Per Block Hour								
	(Column 1) Crew	(Column 2) Fuel & Oil	(Column 3) Maintenance	(Column 4) Total Variable Costs	(Column 5) Rentals	(Column 6) Other	(Column 7) Total Fixed Costs	(Column 8) Total Costs	(Column 9) Block Hours
Two-engine narrow body jet	NR	NR	NR	NR	NR	NR	NR	NR	NR
Two-engine wide body jet	NR	NR	NR	NR	NR	NR	NR	NR	NR
Three-engine narrow body jet	NR	NR	NR	NR	NR	NR	NR	NR	NR
Three-engine wide body jet	NR	NR	NR	NR	NR	NR	NR	NR	NR
Four-engine narrow body jet	NR	NR	NR	NR	NR	NR	NR	NR	NR
Four-engine wide body jet	NR	NR	NR	NR	NR	NR	NR	NR	NR
Regional jet under 40 seats	310	474	554	1,338	486	137	623	1,961	535
ROCKWELL SABRELINER	310	474	554	1,338	486	137	623	1,961	535
Regional jet with 40-59 seats	190	287	127	604	405	46	451	1,055	147,443
CANADAIR RJ-100/RJ-100ER	190	287	127	604	405	46	451	1,055	147,443
Regional jet over 59 seats	NR	NR	NR	NR	NR	NR	NR	NR	NR
Turboprops under 20 seats	108	80	139	327	124	24	148	475	370,813
BEECH 1900 A/B/C	94	101	76	271	135	7	142	413	49,673
BRITISH AEROSPACE JETSTREAM 31	110	77	124	311	119	11	130	441	186,933
DEHAVILLAND TWIN OTTER DHC-6	181	142	200	523	361	43	404	927	3,343
SWEARINGEN METRO II	94	94	205	394	71	39	110	504	5,315
SWEARINGEN METRO III	109	74	182	364	124	49	173	537	125,549
Turboprops with 20 or more seats	157	123	214	494	211	28	239	733	973,201
AEROSPATIALE/AERITALIA ATR-42	154	138	311	602	283	24	307	909	42,601
BRITISH AEROSPACE JETSTREAM 41	146	103	139	388	188	17	205	593	87,791
DEHAVILLAND DHC-8-100 DASH-8	150	133	218	501	247	46	293	794	203,498
DORNIER 328	110	147	154	411	320	20	340	751	9,688
EMBRAER EMB-120 BRASILIA	148	121	165	435	180	34	214	649	296,977
FOKKER FRIENDSHIP F-27/FAIRCHILD F-27/A/B/F/J	182	143	233	557	625	129	754	1,311	4,835
SAAB-FAIRCHILD 340/B	172	121	265	558	203	15	217	776	327,811
SHORTS 360	NR	NR	NR	NR	NR	NR	NR	NR	0
Piston	42	66	80	188	69	13	83	271	97,774
CESSNA C206/207/209/210 STATIONAIR	29	53	52	133	32	14	45	179	3,584
CESSNA C-402/402A	19	36	36	91	17	12	29	119	50,974
CONVAIR CV-340/440	151	310	170	631	1	80	81	712	498
LOCKHEED L-049	70	101	134	304	136	14	150	454	42,686
MCDONNELL DOUGLAS DC-3/A/C,C-47/B	305	186	235	726	11	492	503	1,229	32
All Aircraft	141	125	180	447	200	28	228	675	1,589,766

Source: BTS Form 298-C for year-end 1996.

NR = No data reported.

Col 1: Total flight deck and flight attendant costs divided by total block hours.

Col 2: Cost of total fuel and oil consumed divided by total block hours.

Col 3: Maintenance and maintenance overhead (burden) costs divided by total block hours.

Col 4: Columns 1+2+3.

Col 5: Total amortization (for capital leases), rental charges (for operating leases) and depreciation divided by total block hours.

Col 6: Total other (primarily insurance) costs divided by total block hours.

Col 7: Columns 5+6.

Col 8: Columns 4+7.

Col 9: Block hours reported in 298-C.

Table 4-18
Detail Supporting Table 4-4B
Non-Alaskan Form 298-C Carrier Operating and Fixed Costs Per Airborne Hour

Economic Values Class	Per Airborne Hour								
	(Column 1)	(Column 2)	(Column 3)	(Column 4)	(Column 5)	(Column 6)	(Column 7)	(Column 8)	(Column 9)
Crew	Fuel & Oil	Maintenance	Total Variable Costs	Rentals	Other	Total Fixed Costs	Total Costs	Airborne Hours	
Two-engine narrow body jet	NR	NR	NR	NR	NR	NR	NR	NR	NR
Two-engine wide body jet	NR	NR	NR	NR	NR	NR	NR	NR	NR
Three-engine narrow body jet	NR	NR	NR	NR	NR	NR	NR	NR	NR
Three-engine wide body jet	NR	NR	NR	NR	NR	NR	NR	NR	NR
Four-engine narrow body jet	NR	NR	NR	NR	NR	NR	NR	NR	NR
Four-engine wide body jet	NR	NR	NR	NR	NR	NR	NR	NR	NR
Regional jet under 40 seats	390	597	698	1,685	612	173	785	2,470	425
ROCKWELL SABRELINER	390	597	698	1,685	612	173	785	2,470	425
Regional jet with 40-59 seats	240	362	160	761	510	58	568	1,329	117,070
CANADAIR RJ-100/RJ-100ER	240	362	160	761	510	58	568	1,329	117,070
Regional jet over 59 seats	NR	NR	NR	NR	NR	NR	NR	NR	NR
Turboprops under 20 seats	136	101	175	412	156	30	187	599	294,426
BEECH 1900 A/B/C	119	127	96	342	170	9	179	520	39,440
BRITISH AEROSPACE JETSTREAM 31	139	97	156	392	150	13	163	556	148,425
DEHAVILLAND TWIN OTTER DHC-6	227	179	252	659	455	54	509	1,167	2,654
SWEARINGEN METRO II	119	118	259	496	89	50	139	634	4,220
SWEARINGEN METRO III	137	93	229	459	156	62	218	677	99,686
Turboprops with 20 or more seats	197	155	270	622	265	36	301	923	772,722
AEROSPATIALE/AERITALIA ATR-42	194	173	391	758	356	30	387	1,145	33,825
BRITISH AEROSPACE JETSTREAM 41	183	130	175	488	237	21	258	747	69,706
DEHAVILLAND DHC8-100 DASH-8	190	167	275	631	311	58	369	1,000	161,577
DORNIER 328	139	185	195	518	403	25	428	946	7,692
EMBRAER EMB-120 BRASILIA	187	153	208	548	227	43	270	818	235,800
FOKKER FRIENDSHIP F-27/FAIRCHILD F-27/A/B/F/J	229	180	293	701	787	163	950	1,651	3,839
SAAB-FAIRCHILD 340/B	217	153	334	703	255	18	274	977	260,282
SHORTS 360	NR	NR	NR	NR	NR	NR	NR	NR	0
Piston	53	83	101	237	87	17	104	342	77,633
CESSNA C206/207/209/210 STATIONAIR	36	67	65	168	40	17	57	225	2,846
CESSNA C-402/402A	24	45	45	114	22	14	36	150	40,473
CONVAIR CV-340/440	190	390	215	795	2	101	102	897	395
LOCKHEED L-049	88	127	168	383	171	18	189	572	33,893
MCDONNELL DOUGLAS DC-3/A/C,C-47/B	384	234	297	914	14	620	634	1,548	25
All Aircraft	178	157	227	563	252	35	287	850	1,262,276

Source: BTS Form 298-C for year-end 1996.

NR = No data reported.

Col 1: Total flight deck and flight attendant costs divided by total airborne hours.

Col 2: Cost of total fuel and oil consumed divided by total airborne hours.

Col 3: Maintenance and maintenance overhead (burden) costs divided by total airborne hours.

Col 4: Columns 1+2+3.

Col 5: Total amortization (for capital leases), rental charges (for operating leases) and depreciation divided by total airborne hours.

Col 6: Total other (primarily insurance) costs divided by total airborne hours.

Col 7: Columns 5+6.

Col 8: Columns 4+7.

Col 9: Airborne hours estimated as block hours reported in Form 298-C multiplied by the ratio of (airborne hrs/block hrs) reported for commuter operations in Form 41.

Table 4-19
Detail Supporting Table 4-5
Detail CY 1996 Average Monthly Lease Rate
(\$000/Month, Averages Weighted by Fleet)

Equipment Type	Lease Rate	Equipment Type	Lease Rate	Equipment Type	Lease Rate
1900C	22	777-200A	937	DC-9-50	88
1900D	35	A300-600F	657	DHC63	15
340A	32	A300-600R	507	DHC71	21
340B	60	A300B2-100	111	DHC81	61
707-100B JT3	5	A300B4-100	121	DHC82	84
707-100B JT3 SII	5	A300B4-200	125	DHC83	72
707-300C	14	A300C4-203	120	DO2282	16
707-300C SII	23	A310-200	239	DO3281	77
707-300pax	13	A310-200f	320	EMB110	9
707-300pax SII	16	A310-300	352	EMB120	47
720s	2	A320-200	306	EMB145ER	131
727-100 -217	151	A330-300	820	F274	14
727-100 -7	12	ATP	58	F28-1000	35
727-100 -9	18	ATR423	64	F28-4000	44
727-100 TAY	224	ATR425	98	Fokker F100	141
727-100C/F -7	60	ATR72	108	Fokker F70	150
727-100C/F -7F	62	BAC1-11	5	HS748	17
727-200 -15V	63	BAE146100	84	J31	11
727-200 -217V	252	BAE146200	115	J32	21
727-200A-15	66	BAE146300	142	J41	44
727-200A-17	73	C2121	7	L1011-1	69
727-200A-9	41	C2122	9	L1011-100	96
727-200F	61	C99	9	L1011-1F	34
727-200F -217	179	CN235	50	L1011-200	129
737-100 -7	11	Convair 580/600	11	L1011-200F	242
737-100 -9	11	CRJ100ER	150	L1011-250	205
737-200 -17Q	122	DC-10-10	107	L1011-50	89
737-200A-15	117	DC-10-10F	181	L1011-500	153
737-200A-17	123	DC-10-30	305	L188A	8
737-200A-9	90	DC-10-30F	398	L188AF	18
737-200AC	95	DC-10-40	162	L188C	16
737-300	235	DC-8-50 Fs	40	L188CF	21
737-400	275	DC-8-50 pax	28	MD-11	789
737-500	224	DC8-61	50	MD-11F	804
747-100	88	DC8-61Fs	55	MD-81	147
747-100F	300	DC8-62	64	MD-82 217A	180
747-200	346	DC8-62Fs	69	MD-82 -217C	220
747-200F	644	DC8-63	109	MD-83	251
747-200M	470	DC8-63F	171	MD-87	154
747-300	698	DC8-71	286	MD-88	235
747-400	1,115	DC8-71F	378	MD-90-30	271
747-SP	114	DC8-72	229	MET2	6
757-200	383	DC8-73	321	MET23	28
757-200ER	381	DC-8-73F	414	MET3A	13
767-200	339	DC9-10	25	RJ-85	227
767-200ER	475	DC9-21	25	S2000	111
767-300	555	DC-9-30	79	SH33	7
767-300ER	694	DC-9-30Fs	93	SH362	15
767-300ERF	739	DC-9-40	75	SH363	21

Source: GRA Aviation Specialists, "The Guide" (Herndon, VA, 1996).

Table 4-20
Detail Supporting Table 4-6
Estimated GA and Air Taxi Operating and Fixed Costs - Detail by Equipment Type
(Costs are Hourly Unless Indicated in Column Description)

FAA Category	Name	(Column 1)	(Column 2)	(Column 3)	(Column 4)	(Column 5)	(Column 6)	(Column 7)	(Column 8)
		Crew	Fuel & Oil	Maintenance	Variable Operating Costs (Including Crew)	Variable Operating Costs (Excluding Crew)	Annual Fixed Cost Other	Fixed Cost Per Hour	Total Cost Per Hour (Including Crew)
2	Arrow	72	25	31	128	56	28,200	71	199
2	Beech A36	72	37	48	157	85	54,658	137	294
2	Beech B36 TC	72	39	57	168	96	59,586	149	317
2	Beech F33A	72	31	43	146	74	46,322	116	262
2	Beech V35B	72	31	57	160	88	24,775	62	222
2	Cessna 172P	72	16	27	115	43	13,916	35	150
2	Cessna 172R	72	16	23	112	40	19,673	49	161
2	Cessna 182R	72	27	35	134	62	19,160	48	182
2	Cessna 206	72	31	40	143	71	25,592	64	207
2	Cessna 210	72	39	48	159	87	32,845	82	241
2	Cherokee	72	19	22	113	40	19,605	49	162
2	Malibu Mirage	72	37	52	161	89	93,788	234	396
2	Rockwell International 114A	72	37	36	145	73	57,245	143	288
2	Saratoga SP	72	33	35	141	68	44,739	112	252
2	Socata TB-20 Trinidad	72	31	35	138	66	46,891	117	255
3	Aero Commander 500 S	72	70	113	255	183	34,845	87	342
3	Aztec F	72	56	76	203	131	26,008	65	268
3	Baron 58	72	60	91	223	151	99,417	249	472
3	Baron 58P	72	74	139	285	213	67,215	168	453
3	Cessna 310R	72	62	83	217	145	31,700	79	296
3	Cessna 340A	72	68	89	229	157	49,295	123	353
3	Cessna 414A	72	72	101	245	173	65,325	163	408
3	Cessna 421C	72	87	115	274	202	72,255	181	454
3	Duke B60	72	95	171	338	265	48,145	120	458
3	Navajo Chft	72	76	90	238	166	54,090	135	373
3	Seneca IV	72	56	59	187	115	64,924	162	349
5	Cessna 402C	72	66	89	227	155	52,880	132	360
8	Cessna 208	117	108	110	334	217	177,419	444	778
8	Socata TB21TC	72	35	48	155	83	57,784	144	300
8	Socata TBM 700	117	108	174	399	282	316,154	790	1,189
9	Beech C90A	193	139	228	560	367	334,138	835	1,395
9	Piper PA-31T	193	166	317	676	483	923,525	2,309	2,985
9	Piper PA-31T1	193	149	306	649	456	145,545	364	1,013
10	Pilatus PC XII	117	111	182	411	294	285,993	715	1,126
11	Beech 1900D	225	240	306	771	546	628,701	1,572	2,343
11	Beech 2000	193	265	298	756	563	425,950	1,065	1,821
11	Beech A100	193	160	284	636	443	135,048	338	974
11	Beech B100	193	162	307	661	468	156,400	391	1,052
11	Beech B200	193	174	250	616	423	467,934	1,170	1,786
11	Beech B300	193	206	278	677	484	305,450	764	1,441

Table 4-20 (Continued)
Detail Supporting Table 4-6
Estimated GA and Air Taxi Operating and Fixed Costs - Detail by Equipment Type
(Costs are Hourly Unless Indicated in Column Description)

FAA Category	Name	(Column 1)	(Column 2)	(Column 3)	(Column 4)	(Column 5)	(Column 6)	(Column 7)	(Column 8)
		Crew	Fuel & Oil	Maintenance	Variable Operating Costs (Including Crew)	Variable Operating Costs (Excluding Crew)	Annual Fixed Cost Other	Fixed Cost Per Hour	Total Cost Per Hour (Including Crew)
11	Cessna 425	193	147	244	584	391	183,870	460	1,044
11	Cessna 441	193	143	305	642	449	231,343	578	1,220
11	Commander 690B	193	168	314	675	482	126,320	316	990
11	Gulfstream AM Corp Comm Div 690C	193	168	311	671	478	167,930	420	1,091
11	Gulfstream AM Corp Comm Div 690D	193	149	310	653	460	178,880	447	1,100
11	Gulfstream AM Corp Comm Div 695	193	170	290	653	460	214,468	536	1,189
11	King Air F-90-1	193	166	285	644	451	217,668	544	1,188
11	Mitsubishi MU-2B-60	193	166	368	726	533	154,645	387	1,113
11	Mitsubishi MU-300	225	318	418	961	736	257,364	643	1,604
11	Piaggio P180	193	204	309	706	513	426,950	1,067	1,773
11	Piper PA-42-1000	193	190	353	736	543	209,990	525	1,261
11	Piper PA-42-720R	193	198	302	693	500	306,200	766	1,458
11	Swearingen SA-226AT	225	178	280	682	458	492,596	1,231	1,914
11	Swearingen SA227-TT	193	170	312	675	482	264,500	661	1,336
12	de Havilland DHC-6-300	193	178	209	580	387	235,438	589	1,168
12	Grumman G-159	225	465	630	1,319	1,094	248,721	622	1,941
12	SAAB 340B	225	259	323	806	581	1,205,708	3,014	3,820
14	Beechjet 400A	225	345	396	965	740	711,840	1,780	2,745
14	Cessna 500	225	273	440	939	714	267,514	669	1,607
14	Cessna 525	225	224	281	730	505	429,955	1,075	1,805
14	Cessna 550	225	312	338	875	651	484,504	1,211	2,087
14	Cessna 560	225	339	375	939	714	612,929	1,532	2,471
14	Cessna 650	280	414	479	1,174	893	925,076	2,313	3,486
14	Cessna S550	225	337	361	922	698	382,854	957	1,880
14	Dassault-Breguet Falcon 10	225	372	503	1,099	874	452,804	1,132	2,231
14	Gates LearJet 25D	225	500	630	1,355	1,130	208,582	521	1,876
14	Israel Aircraft Industries 112- 4	280	380	577	1,237	956	360,034	900	2,137
14	Israel Aircraft Industries 112- 4A	280	380	577	1,237	956	392,584	981	2,218
14	Israel Aircraft Industries 112- 5 Westwind Astra	280	402	423	1,105	825	1,043,250	2,608	3,713
14	Learjet 24E	225	500	640	1,365	1,140	164,822	412	1,777
14	LearJet 31	225	291	390	906	681	676,732	1,692	2,598
14	Learjet 35A	225	351	411	987	762	561,172	1,403	2,389
14	Learjet 55C	280	402	506	1,188	908	705,514	1,764	2,952
14	LearJet Inc. 60	280	356	491	1,127	846	1,198,204	2,996	4,122
14	Raytheon Corporate Jets Inc- Hawker 800	280	420	486	1,186	906	1,150,388	2,876	4,062

Table 4-20 (Continued)
Detail Supporting Table 4-6
Estimated GA and Air Taxi Operating and Fixed Costs - Detail by Equipment Type
(Costs are Hourly Unless Indicated in Column Description)

FAA Category	Name	(Column 1)	(Column 2)	(Column 3)	(Column 4)	(Column 5)	(Column 6)	(Column 7)	(Column 8)
		Crew	Fuel & Oil	Maintenance	Variable Operating Costs (Including Crew)	Variable Operating Costs (Excluding Crew)	Annual Fixed Cost Other	Fixed Cost Per Hour	Total Cost Per Hour (Including Crew)
15	British Aerospace A/C Group	280	418	540	1,238	958	519,088	1,298	2,536
15	Challenger 600 S	352	596	1,400	2,348	1,996	875,520	2,189	4,537
15	Corporate Jets Ltd. BAE 125-1000A	280	434	498	1,212	932	1,504,348	3,761	4,973
15	Corporate Jets Ltd. BAE 125-800A	280	420	486	1,186	906	1,150,388	2,876	4,062
15	Dassault-Breguet Mystere Falco	280	402	622	1,304	1,024	896,864	2,242	3,546
15	Falcon 200	280	513	802	1,595	1,315	728,886	1,822	3,417
15	Gulfstream Aerospace G-IV	352	794	631	1,777	1,425	3,193,183	7,983	9,760
15	HS 125-600A	280	701	849	1,831	1,550	230,188	575	2,406
15	North American NA-265-60	280	622	553	1,456	1,176	210,378	526	1,982
17	Falcon 50	280	626	596	1,501	1,222	1,767,962	4,420	5,921
17	Falcon 900B	352	543	683	1,579	1,227	2,843,989	7,110	8,689
17	Lockheed 1329-25 Jetstar II	280	808	1,075	2,163	1,883	397,360	993	3,156
18	Dassault Aviation	352	450	554	1,357	1,005	2,104,937	5,262	6,620
18	Saab-Scania	225	553	406	1,185	960	1,742,668	4,357	5,541
19	Hiller-Rodgers Helicopter UH12	89	41	153	283	194	75,795	189	473
19	Robinson Helicopter R22 Beta	89	21	66	177	88	46,235	116	292
20	Aerospatiale AS 355 F Ecureuil	272	121	330	722	450	310,443	776	1,498
20	Aerospatiale AS350BA	138	94	286	517	380	176,084	440	957
20	Bell 206B3	138	58	192	388	250	127,972	320	708
20	Enstrom 280FX	89	32	95	217	128	69,860	175	391
20	MDHC 500E	138	58	220	416	278	127,838	320	736
20	MDHC 520N	138	62	218	418	280	141,908	355	772
22	Agusta S.P.A. A109K2	272	158	528	958	687	478,150	1,195	2,154
22	Bell 206L3	138	75	233	445	308	125,300	313	759
22	Bell 206L4	138	79	247	464	327	184,260	461	925
22	Bell 222B	321	175	525	1,020	700	167,365	418	1,439
22	Bell 230	321	173	465	959	638	546,300	1,366	2,325
22	Bell 412EP	321	235	604	1,159	839	675,260	1,688	2,848
22	Eurocopter AS 350 B2 Ecureuil	138	100	287	525	387	198,998	497	1,022
22	Eurocopter DitchInd GMBH BK117C	321	160	465	946	625	558,218	1,396	2,341
22	Eurocopter/France AS355N Ecureuil	272	123	382	776	504	336,085	840	1,616
22	Sikorsky S61N	365	364	1,090	1,819	1,454	351,920	880	2,699
22	Sikorsky S76A	321	169	630	1,120	799	213,860	535	1,654
22	Sikorsky S76B	321	221	723	1,265	944	897,835	2,245	3,509
22	Sikorsky S76C/C+	321	175	701	1,196	875	851,898	2,130	3,326

Source: Conklin and deDecker, *The Aircraft Cost Evaluator*, Spring, 1997.

Col 1: Crew cost per hour, reported by Conklin and deDecker.

Col 2: Fuel and Oil per Hour, assuming \$2.02 per gallon for fuel.

Col 3: Maintenance cost per hour.

Col 4: Variable Operating Cost including crew. Sum of Columns 1, 2 and 3.

Col 5: Variable Operating Cost excluding crew. Sum of Column 2 and Column 3.

Col 6: Total fixed cost including depreciation.

Col 7: Fixed cost per hour, assuming 400 hours per year utilization.

Col 8: Sum of Column 4 and Column 7.

Table 4-21
Detail Supporting Table 4-9
Detail of Military Aircraft Cost by Equipment Type
(Averages Weighted By Fleet)

Type	Operating Cost Per Hour	Fleet Size
Boeing B-52H	\$6,950	94
Northrop Grumman B-2A	\$13,528	15
Rockwell B-1B	\$11,550	95
Lockheed C-141B	\$2,850	144
Lockheed C-5A	\$6,545	84
Lockheed C-5B	\$6,087	50
McDonnell Douglas C-17A	\$5,075	22
McDonnell Douglas KC-10A	\$2,094	59
Boeing C-135A/B/C/E	\$320	15
Boeing EC-135	\$3,305	15
Boeing KC-135E/R	\$1,946	551
Boeing RC-135	\$1,474	19
Boeing E-3B/C	\$4,586	34
Boeing E-6A	\$2,509	16
OTHER	\$2,543	37
Turbojet/fan 3+ engines	\$3,918	1,250
McDD/BA AV-8B Harrier 2	\$2,634	201
McDonnell Douglas F/A-18	\$3,023	1,039
Fairchild A-10A	\$1,637	380
Lock Martin F-16A/B	\$1,850	225
Lock Martin F-16C/D	\$2,201	1,039
Lockheed F-117A	\$1,360	52
McDonnell Douglas F-15A/B/C/D	\$4,332	726
McDonnell Douglas F-15E	\$4,747	204
Gen Dyn F-111	\$4,433	135
Grumman F-14	\$3,988	361
McDonnell Douglas F-4	\$2,275	196
McDonnell Douglas T-45A	NR	44
Northrop F-5	\$1,809	45
OTHER	\$1,641	16
Turbojet/fan Attack/Fighter	\$2,981	4,663
Gulfstream C-20	\$674	20
Learjet C-21	\$159	83
McDonnell Douglas C-9A/C	\$925	52
Rockwell CT-39E/G Sabreliner	\$1,125	12
Rockwell T-39	NR	23
Grumman A-6	\$2,913	185
Lockheed U-2R/RT	NR	37
Boeing T-43A	\$865	14
McDonnell Douglas TAV-8B	\$2,059	17
Raytheon T-1A	\$155	132
Rockwell T-2B/C	NR	111
Cessna T-37B	\$255	488
Northrop T-38	\$754	497
Other	NR	3
Turbojet/fan Other	\$796	1,674

Table 4-21 (Continued)
Detail Supporting Table 4-9
Detail of Military Aircraft Cost by Equipment Type
(Averages Weighted By Fleet)

Type	Operating Cost Per Hour	Fleet Size
Alenia c-27A	\$244	10
Beech T-34C	\$173	272
Beech T-42A	NR	14
Beech U-8F	NR	48
Grumman C-2A	\$1,889	38
Grumman E-2C	\$2,563	91
Grumman OV-1D	\$1,128	59
Lock Martin C-130 A-E	\$1,722	622
Lock Martin C-130-OTHER	\$3,123	91
Lockheed ES-3A	\$1,988	16
Lockheed Martin KC-130F/R/T	\$1,477	183
Lockheed Martin P-3C	\$2,009	263
Lockheed S-3B	\$2,925	119
Raytheon C-12	\$319	199
Raytheon RC-12	\$491	134
Raytheon RU-21	\$277	107
Raytheon T-44A	NR	57
Other+A94+A96	\$1,169	48
Turboprop	\$1,408	2,371
Slingsby T-3A//Piston	n.a	91
Bell AH-1E/F/F/P/S	\$688	929
Bell AH-1W	\$688	140
Bell HH-1H	\$663	58
Bell OH-58A-C	\$108	1,517
Bell OH-58D	\$875	289
Bell TH-57	NR	129
Bell TH-67A	NR	82
Bell UH-1B/H/V	\$134	2,872
Bell UH-1N	\$835	159
Boeing CH-46	\$1,852	499
Boeing CH-47C/D	\$1,384	430
Hughes OH-6A	\$81	229
Kaman SH-2F/G	\$1,193	26
McDonnell Douglas AH-64A	\$2,819	755
McDonnell Douglas AH-6C/G	NR	60
Sikorsky CH-53D	\$2,728	496
Sikorsky SH-3H	\$1,464	40
Sikorsky SH-60B	\$1,287	1,617
Sikorsky VH-3D11	\$220	11
Other	\$1,128	16
Rotary Aircraft Total	\$883	10,354
Source: Military service data cited in the text.		
NR = No data reported.		